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Contents

THE PRESENT STATUS OF THE HEMORRHAGIC DISEASES.

Armand J. Quick, Ph.D., M.D., Milwaukee, Wisconsin 775

MENIERE'S DISEASE.

J. R. Lindsay, M.D., Chicago, Illinois..... 778

THE CONTROLLED ADMINISTRATION OF FLUID TO SURGICAL PATIENTS.

Owen H. Wangenstein, M.D., Minneapolis, Minnesota 783

CLINICAL ASPECTS OF BRANCHIAL FISTULÆ.

Ernest R. Anderson, M.D., F.A.C.S., Minneapolis, Minnesota 789

EVALUATION OF RECENT DATA ON BOILED LIVER EXTRACT METHOD OF TREATING ACNE VULGARIS.

Wallace Marshall, M.D., Appleton, Wisconsin.... 796

OCULAR MANIFESTATIONS OF SOME CONSTITUTIONAL DISTURBANCES.

George L. Loomis, M.D., Winona, Minnesota.... 797

THE TUBERCULOSIS PROGRAM OF THE MINNESOTA STATE MEDICAL ASSOCIATION.....

800

CLINICAL-PATHOLOGICAL CONFERENCE.

Presentation of a Case.

A. J. Hertzog, M.D., and S. V. Lofness, M.D. 807

HISTORY OF MEDICINE IN MINNESOTA:

Pioneer Physicians of Martin County

Prior to 1900

Roscoe C. Hunt, M.D., Fairmont, Minnesota... 808

PRESIDENT'S LETTER:

Medical Education in Wartime..... 815

EDITORIAL:

Tuberculosis Among Mexicans..... 816

Coroner Heart Cases..... 816

Medical Society Dues..... 817

Quinine and Quinidine..... 817

Community and War Chests..... 818

War Department—Policies Governing Appointments 818

MEDICAL ECONOMICS:

Bill for Government Hospitalization Introduced.. 820

For Co-operation Now..... 820

New Committee to Study Medical Care in Minnesota 821

INDUSTRIAL HEALTH:

Occupational Health Hazards..... 823

IN MEMORIAM 824

REPORTS AND ANNOUNCEMENTS..... 827

WOMAN'S AUXILIARY 828

OF GENERAL INTEREST..... 829

BOOK REVIEWS 835

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MINNESOTA MEDICINE

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THE PRESENT STATUS OF THE HEMORRHAGIC DISEASES

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IT required a vitamin to stimulate a new interest in the hemorrhagic diseases. Due to vitamin K, a more optimistic outlook has been taken on the ultimate conquest of all the bleeding diseases. It seems timely, therefore, to outline the present status of our knowledge concerning the group of diseases in which hemorrhage plays a predominant role.

That there has been progress in this field of medicine is obvious to all who follow the current medical literature. The advance has been threefold:

1. The concept of the physiology and pathology of hemorrhage and of hemostasis has been clarified and freed of futile and needlessly complex theories.
2. The diagnosis of bleeding conditions has been made more accurate by newer laboratory tests.
3. Therapy has been improved, and in the bleeding of jaundice and of the newborn has actually been revolutionized.

The hemorrhagic diseases can be divided into two major classes: (1) the true, in which the defense mechanism against hemorrhage is defective; and (2) the group of diseases in which hemorrhage is a prominent symptom, but the hemostatic process is normal. This second class can be dismissed without much comment since the basic defect is anatomical. In this category can be included traumatic injury of blood vessels such as occur in gastric ulcer, in tuberculosis, in malignancy, or in esophageal and anal varices.

Likewise, hereditary telangiectasia and scurvy can be put into this group since in these conditions the defect in the vessel is anatomical—the physiological reactions of hemostasis are essentially normal.

To understand the true hemorrhagic diseases it is necessary to know what constitutes the mechanism of hemostasis. The latter process is best presented by following the course of events in a blood vessel that is injured or severed. The first reaction is a marked constriction, which often brings about a complete but temporary arrest of bleeding. This vascular response is of greatest importance, for it is during the contractive phase that the permanent plugging of the vessel is effected. It should be emphasized that it is the coagulation within the vessel that is responsible for effective hemostasis.

For purposes of presentation, the coagulation reaction can be expressed by two simple equations:

- (1) Prothrombin calcium + thromboplastin = thrombin
- (2) Fibrinogen + thrombin = fibrin (clot)

Actually the mechanism is much more complex and involves many poorly understood factors. Prothrombin occurs exclusively in the plasma and according to recent findings is a compound of calcium. The latter element is essential for its conversion to thrombin, since decalcifying agents such as oxalates and citrates render it inactive. Thromboplastin is exclusively an intracellular product. It is widely distributed within the body, but it is the fraction that comes from the platelets that plays the dominant role in coagulation.

The platelets have multiple functions in hemo-

From the Department of Pharmacology, Marquette University School of Medicine. Presented at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 29, 1942.

tasis. Not only do they furnish thromboplastin, but they appear to serve as the cementing material that binds the fibrin to the injured vessel wall. A deposit of agglutinated platelets on the roughened or traumatized endothelial lining precedes the formation of fibrin, and serves to anchor the strands of fibrin. The platelets too are responsible for clot retraction which gives firmness and tenacity to the fibrin plug. But most important of all, the platelets are related to the contractive response of the vessels to injury.

The significance of the platelets in hemostasis is best illustrated by thrombocytopenic purpura. In this disease enough thromboplastin is usually available to maintain a normal coagulation time so that a fibrin clot can be produced, yet hemostasis is markedly defective. In the first place, due in all probability to the diminished number of platelets, the vascular contractive response is impaired, as shown by the prolonged bleeding time. The blood continues to flow freely from the dilated vessel and no opportunity is afforded for the formation of a clot within the lumen. In the second place, a lack of cementing substance needed to bind the fibrin strands to the injured vessel wall will result from the paucity of platelets, and likewise the retraction of the clot will not occur. As a result the clot will be friable, and poorly attached, so that its hemostatic value will be very poor. It is easy to understand, therefore, why hemorrhage in thrombocytopenic purpura is difficult to control.

In hemophilia the platelets likewise appear to be the causative factor of the disease. While they are normal in number, they appear to be unduly resistant to lysis and, therefore, liberate thromboplastin too slowly for effective coagulation.

In pseudohemophilia, a disease characterized by being definitely hereditary and by a prolonged bleeding time, the platelets also have been suspected of being responsible for the hemorrhagic tendency, but it is probable that the defect is intrinsically in the minute vessels themselves.

As stated before, the plasma furnishes two factors for coagulation: fibrinogen and prothrombin. The former can be dismissed from consideration, since it is exceedingly rare to find a bleeding diathesis due to lack of fibrinogen. Prothrombin deficiency, however, is of greatest importance.

It has been found that the body depends on vitamin K for its synthesis and that the site of its production appears to be the liver. It has further been observed that a coumarin derivative obtained from spoiled sweet clover hay causes a depletion of the prothrombin of the blood, and very recently an idiopathic hypoprothrombinemia, apparently congenital, has been reported. The latter type is especially worthy of notice since the condition simulates hemophilia, and can easily be mistaken for it.

The hypoprothrombinemias can be outlined as follows:

- A. Diminished prothrombin (prothrombinopenia)
 - (a) Lack of Vitamin K
 1. Dietary origin (lack of bacteria in intestines)
 - (i) Hemorrhagic disease of the newborn
 2. Failure of absorption
 - (i) Absence of bile salts in the intestines
 - Biliary obstruction
 - Biliary fistula
 - (ii) Intestinal disorders
 - Nontropical sprue
 - Ulcerative colitis
 - Prolonged diarrhea, etc.
 - (b) Poor utilization due to liver damage
 1. Chronic cirrhosis due to prolonged biliary obstruction
 2. Acute hepatitis (yellow atrophy)
 3. Chronic atrophic cirrhosis (Laennec)
 4. Hyperpyrexia (artificial fever)
 - (c) Toxins
 1. Spoilt sweet clover disease of cattle
 - (d) Essential or idiopathic (probably congenital)

With this clearer understanding of the nature of the more common hemorrhagic diseases, it is possible to outline the differential diagnosis on the basis of laboratory tests. It must be stressed, however, that clinical observations and the medical history are also necessary for arriving at an accurate diagnosis. Thus bleeding into deep structures, i.e., into muscles and joints, usually occurs when coagulation is defective. Hemophilia, and apparently idiopathic hypoprothrombinemia are the diseases in which for instance hemarthrosis is frequently encountered. Bleeding into the skin and oozing from mucous membranes is usually associated with diseases in which the vascular response is impaired. Thrombocytopenic purpura is the best example of this class. It might be mentioned that the petechiae are the characteristic lesions in this disease. Ecchymoses are found, in contrast, in all hemorrhagic diseases.

HEMORRHAGIC DISEASES—QUICK

In the history, the sex of the patient, the time of onset, the frequency of attacks, and the nature of the bleeding supply important information, but of greatest significance is the hereditary history. There are three bleeding diseases which are inheritable. These can be outlined as follows:

- I. Hemophilia
 - Sex-linked—recessive
 - Transmitted only by female
 - Occurs only in males
- II. Pseudohemophilia
 - Sex-linked—dominant
 - Transmitted by and occurs in both sexes
- III. Telangiectasia
 - Non-sex-linked—dominant
 - Transmitted by and occurs in both sexes

The laboratory tests are essential for diagnosis. Fortunately the common methods are simple and few in number. The following outline should serve as a helpful guide:

1. Prolonged coagulation time
 - (a) In hemophilia
 - (b) In the hypoprothrombinemias
 - (c) In marked reduction of plasma fibrinogen
2. Prolonged coagulation time of recalcified plasma.¹
 - (a) In hemophilia (characteristically influenced by the rate at which the blood is centrifuged)
 - (b) In the hypoprothrombinemias
 - (c) In thrombocytopenic purpura occasionally
3. Prolonged bleeding time
 - (a) In thrombocytopenic purpura
 - (b) In pseudohemophilia
4. Absence of clot retraction
 - (a) In thrombocytopenic purpura
 - (b) In pseudohemophilia occasionally
5. Reduced platelet count
 - (a) In thrombocytopenic purpura
6. Positive tourniquet test
 - (a) In thrombocytopenic purpura
 - (b) In pseudohemophilia occasionally
7. Reduced prothrombin concentration in the plasma
 - (a) See outline of prothrombin deficiencies

In using this outline, it must be remembered that exceptions can and do occur. Thus, for instance the bleeding time is sometimes prolonged in hemophilia. Nevertheless if these tests are carefully applied a reasonably accurate diagnosis can usually be made.

The fact that no specific cures for the hemorrhagic disease have been found except for the hypoprothrombinemias, does not signify that progress has not been made in this group of clinical entities.

For essential thrombocytopenic purpura sple-

nectomy still remains the most dependable therapeutic measure. The chief problem, however, is the differentiation of the idiopathic from the secondary purpuras. It is well to recognize that only a relatively small fraction of the hemorrhagic purpuras are primary. It is, therefore, of major importance to investigate the cause of the purpura. Infections, blood dyscrasias and allergy appear to be the most important factors in the secondary purpuras. It is well to bear in mind that thrombocytopenic purpura is frequently caused by drugs, of which the sulfanilamide group is no exception. Other types of allergy likewise appear to be responsible for producing hemorrhagic purpura. At our present stage of knowledge, removal of the cause is the most effective cure.

Specific therapeutic agents are still lacking. Vitamin C has been disappointing in all cases except in frank and sub-clinical scurvy. Vitamin P may perhaps be effective in certain types of purpura such as senile, but it seems to be useless in true Werlhof's disease. Epinephrine and related substances, such as strychnon, have been used in European clinics and some success has been reported.

Many cures for hemophilia have been proposed, but so far none has stood the test of time. At present the injection of oxalic acid is attracting some attention. A little over two decades ago similar results were reported following the intravenous administration of sodium citrate. Why this treatment was abandoned is not clear. Perhaps further research is indicated.

While no clue for hemophilia is in the offing, much can be done for the hemophilic patient. Supervision of play and later guidance as to occupation to minimize the hazard of trauma goes a long way in the prevention of disabling deformities.

The treatment of hypoprothrombinemia with vitamin K has been discussed so much that only a few remarks seem necessary. In obstructive jaundice and in biliary fistula treatment with bile salts and menadione by mouth is usually sufficient. To be sure, the prothrombin content of the blood must be repeatedly determined and any operation should be postponed until the level is at least 70 per cent of normal. If the absorption of vitamin K is apt to be impaired by factors such as diarrhea, or if the patient is unable to retain food, menadione in oil should be given intra-

muscularly, or a water-soluble derivative given intravenously.

In liver disease the prothrombin may be low and vitamin K alone may be ineffective in raising the level. Treatment of the liver condition to restore hepatic function is the most logical course. Intravenous injection of glucose is still the most reliable means to treat hepatic dysfunction.

The treatment of the hemorrhagic disease of the newborn with vitamin K constitutes an important advance in pediatrics. The fact that the hypoprothrombinemia during the first few days of life can be prevented by giving vitamin K to the mother shortly before the birth of the baby is of utmost significance. Even though the incidence of hemorrhage in the newborn is low, the danger is present nevertheless, and therefore the routine practice of giving the mother 2 mg. of menadione in oil daily during the last week of pregnancy is certainly to be recommended. It is to be regretted that occasionally efforts are being made to belittle the value of vitamin K.

No effort will be made to discuss the treatment of the rarer hemorrhagic diseases. One should discuss at least briefly the most universally used therapy in the hemorrhagic diseases, namely blood transfusion. Apparently it is of value in nearly every type of bleeding diathesis. In addition to restoring blood volume and improving the anemia it assists in restoring the hemostatic response. Whether the new supply of platelets of the transfused blood is responsible for its effectiveness in purpura is not known definitely. In hemophilia the new blood perhaps affects the sta-

bility of the hemophilic platelets. In hypoprothrombinemia it restores at least partially the prothrombin level. Usually, however, the beneficial effect is only temporary.

Genetic considerations are important in the hereditary bleeding diseases. Hemophilia occurs principally in English and northern European stock. Due to the tendency toward small families in these races and the fact that hemophilia is inherited as a sex-linked, recessive characteristic, the disease has probably decreased although accurate figures to substantiate this statement are not available. Pseudohemophilia is a relatively rare disease, but the hereditability of this disease is an unescapable fact. Telangiectasia is perhaps the most serious since it is transmitted as a non-sex-linked dominant. It does not seem to be generally recognized that this entity is a serious disabling disease.

The problem of handling a hereditary disease is difficult. Education, especially of the members of families in which a hemorrhagic disease occurs, is at least an essential preliminary step. They should be impressed with the seriousness of these diseases, and the responsibility that is theirs.

In conclusion, marked strides have been made in the hemorrhagic diseases, but much remains to be done. At present only part of the groundwork has been completed, but already the gully of misunderstanding which has separated the laboratory from the clinic has been closed.

Reference

1. Quick, A. J.: The diagnosis of hemophilia. *Am. Jour. Med. Sci.*, 201:469, 1941.

MENIERE'S DISEASE

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THE terms Ménière's symptom, symptom complex and Ménière's disease have been used in a very broad sense until recent years. There has been a tendency to include under this general heading attacks of vertigo which could be attributed to various causes: for instance, toxic labyrinthitis, hemorrhage, thrombosis and other conditions. It has been known from clinical ob-

servations for many years that a definite syndrome existed consisting of recurring attacks of vertigo, associated with auditory disturbances also fluctuating in nature, which could only be explained by a disease involving the inner ear or the eighth nerve. Accumulating information in the last few years indicates that this syndrome is due to a pathological entity in the internal ear known as labyrinthine dropsy (hydrops labyrinthi, dilatation of the endolymphatic spaces). This

From the Division of Otolaryngology of The University of Chicago. Presented at the annual meeting of the Minnesota State Medical Association at Duluth, Minnesota, July 1, 1942.

MENIERE'S DISEASE—LINDSAY

constitutes the clinical entity which is now generally known by the name of Ménière's syndrome and because of the definite pathological lesion it seems that the name Ménière's disease is warranted.

disease have been described. Each case demonstrated the same inner ear pathology. In addition five ears with the same pathology have been described, two by myself, in which only deafness was known to have existed but in which there

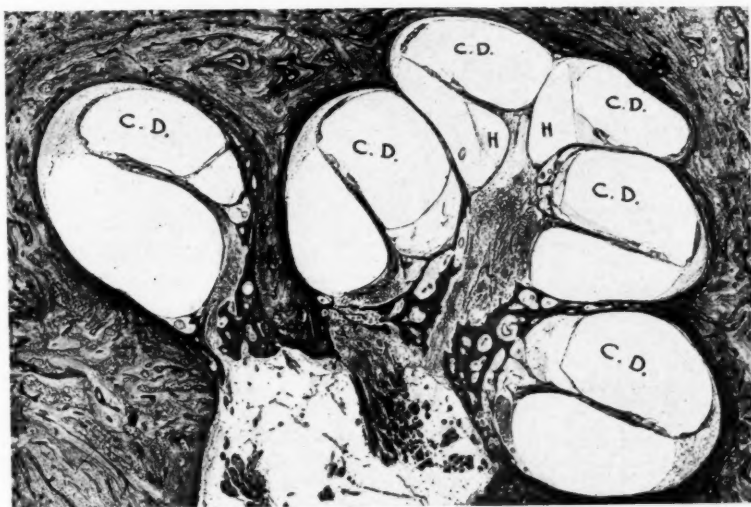


Fig. 1. Photomicrograph of section of the cochlea in advanced labyrinthine dropsy in male of sixty-seven years. The cochlear duct (C.D.) is dilated almost to the point of obliteration of the scala vestibuli, and herniates through the helicotrema into the scala tympani (H). The neural elements are well preserved for the age period.

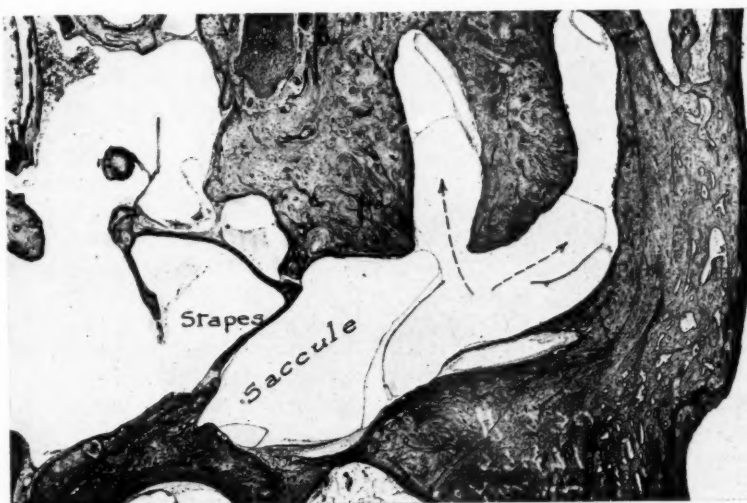


Fig. 2. Section through the vestibule in the opposite ear to Figure 1. The greatly dilated saccule lies against the stapes footplate. The utricle has herniated to some distance into the semicircular canals (arrows).

Pathology

The first observations of inner ear pathology were made by Hallpike and Cairns in 1938. Since that time a total of six proven cases of Ménière's

was a possibility that vertigo may have been present in earlier years.

The pathological picture consists of a generalized dilatation of the endolymphatic spaces in the

MENIERE'S DISEASE—LINDSAY

inner ear. Because of variations in thickness of the walls of the membranous labyrinth, the dilatation occurs in certain areas where resistance is less, namely, the cochlear duct and the saccule and utricle in the vestibule (Figs. 1 and 2).

the disease deafness may become severe and involves all frequencies.

The attacks of vertigo tend to decrease after a few years and may disappear but the deafness persists or may progress. This late stage in

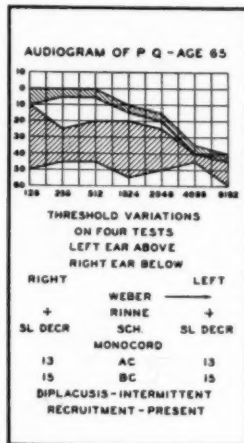


Fig. 3. Composite audiogram of a case of Ménière's disease in the right ear showing the range of fluctuation in the hearing. The patient had some high tone loss in both ears, but the fluctuation with attacks affects mainly the lower frequencies. Bone conduction tended to vary directly with air conduction.

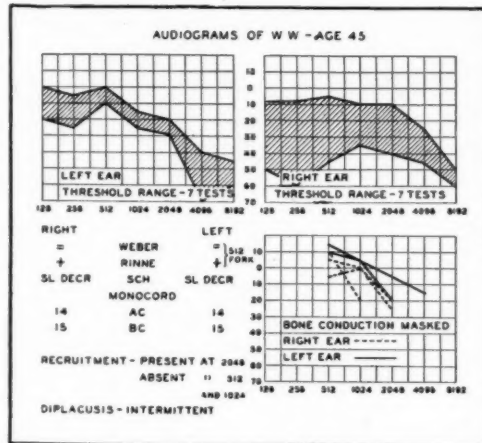


Fig. 4. Ménière's disease in right ear of 65-year-old male. The composite audiogram shows the variation in the hearing threshold in the affected ear (below) as compared to the good ear (above).

The fluctuation in the hearing for low tones is characteristic. The high tone loss is not a constant finding in this disease (See Figure 5).

The high tone limit as shown by the monocord remains nearly normal until the late stage of the disease (Figure 6).

This pathological entity provides a basis for the clinical syndrome of associated disturbances of hearing and equilibrium.

The histological picture does not explain the pathogenesis, however, nor is the etiology clear.

Symptoms

The classical syndrome in Ménière's disease consists of a sense of blockage or increasing noises, and increasing impairment of hearing in the affected ear, followed by an attack of vertigo. The vertigo may be sudden or may develop more slowly, giving time for the patient to protect himself against falling. Nausea and vomiting occur in the severe attacks. There is great variation in frequency, duration and severity of the vertigo. Other symptoms such as constipation, headache, fatigue and depression may precede an attack and perspiration and diarrhea accompany the vertigo. After the attack all symptoms may leave and the hearing improves. The fluctuations in hearing involve the lower tones. Variations of 30 and 40 decibels before and after an attack are common (Figs. 3 and 4). In later stages of

which only deafness is evident may occupy many years and if seen at such a time the true nature of the ear disease might be unsuspected.

Etiology

The cause of labyrinthine dropsy or hydrops of this type is not clear. Hydrops is known to occur in certain inflammatory diseases of the middle and inner ear and in certain diseases of the bony labyrinth capsule, but these conditions have been absent in Ménière's disease.

Since epithelial structures exist within the membranous labyrinth which apparently have the function of secreting and removing endolymph, some interference with their function might be expected, but histological examination has not demonstrated any definite lesion of these structures.

On the basis of clinical observation it is known that the syndrome appears in people with low blood pressure, vasomotor instability, headaches, and gastro-intestinal disturbances. It seems likely that the vasomotor disturbances may affect the capillaries in the stria vascularis or the aque-

ductus endolymphaticus in the inner ear, resulting in an increase in the amount of endolymph.

Diagnosis

In the presence of the complete syndrome of attacks of vertigo associated with fluctuations in hearing and other auditory symptoms the diagnosis of Ménière's disease is usually not difficult. Those conditions requiring differentiation are: Tumors involving the eighth nerve or temporal bone, hemorrhage or thrombosis of vessels supplying the labyrinth, toxic labyrinthitis or eighth nerve neuritis, specific inflammatory disease such as syphilis, granuloma, injuries.

An acoustic tumor is easily distinguished by the steadily progressive or profound nerve deafness, infrequent attacks of vertigo, absent vestibular responses, enlargement of the internal auditory meatus on x-ray examination and the involvement in later stages of other cranial nerves.

Tumor of the temporal bone other than eighth nerve tumors usually invade the air cell system and affect the middle ear. If vertigo occurs in attacks the fistula test is likely to be positive. All symptoms tend to be steadily progressive rather than fluctuating as in Ménière's disease, and the x-ray provides evidence of bone erosion.

Syphilis, particularly of the congenital type, frequently produces an osteitis and progressive labyrinthitis. Vertigo may occur in attacks and the fistula test become positive. Deafness progresses rapidly without fluctuations, other stigma of the disease may be present and the serology of the blood or spinal is usually positive.

Hemorrhage or thrombosis affecting the vessels supplying the labyrinth results in a severe attack of vertigo, nausea and vomiting with profound nerve deafness. The deafness is permanent and recovery from the vertigo requires a period of weeks during which compensation gradually develops. There is usually permanent loss of vestibular responses in the affected ear. A similar course of events is characteristic of hemorrhage into the labyrinth in severe skull trauma, also of a basal skull fracture involving the labyrinth.

Greater difficulty may be experience in differentiating some cases of toxic involvement.

A neuritis of the acoustic division of the eighth nerve is common after mumps and occasionally after some other infections. The vestibular division usually escapes but may be affected also. Complete permanent deafness of one ear is fairly

common and occasionally vertigo and loss of vestibular function. Certain drugs such as quinine, salicylates, and less frequently alcohol and tobacco have a tendency to affect the eighth nerve and produce vertigo and auditory symptoms.

A few cases have been reported in which attacks of vertigo and impaired hearing occurred in connection with allergic attacks. Some evidence of allergy is not uncommon in people with Ménière's disease, but the impression that the disease is to be considered as an expression of allergy is unwarranted.

Attacks of vertigo without any auditory disturbances may present a more difficult problem of diagnosis.

In order to localize the lesion definitely to the peripheral vestibular apparatus it is necessary to have associated auditory disturbances. On the other hand certain characteristics of the vertigo; nystagmus which occurs only on directing the gaze away from the resting position and always in the direction of gaze; a postural vertigo in which the nystagmus changes its direction or is irregular in direction; a marked discrepancy between the amount of vertigo and the degree of nystagmus, also oblique or vertical nystagmus is usually central in origin.

The conditions to be differentiated as causes for vertigo without auditory disturbances include early brain tumors, degenerative diseases of the central nervous system, such as multiple sclerosis and syringomyelia, encephalitis, hemorrhage and thrombosis, post-concussion syndrome, arteriosclerosis, hypertension and hypotension. While the characteristics of the nystagmus may be sufficient to place the lesion centrally the diagnosis in most of these conditions depends upon the presence of associated central nervous system signs and other indications of the particular disease.

While a central nervous system lesion which would produce only vertigo must be very limited in extent it appears that in addition to specific vascular lesions such as the posterior inferior cerebellar artery syndrome, small vascular lesions may occur in the central nervous system in arteriosclerotics, producing vertigo as a chief symptom. These usually have a sudden onset and slow gradual recovery.

Hypertension is associated with frequent vertigo, usually of short duration. Defective circula-

MENIERE'S DISEASE—LINDSAY

tion is likely to be associated with vertigo on changing from the lying or sitting to the erect posture.

Recurring attacks of vertigo, frequently postural in character, without auditory disturbances

the third stage after vertigo attacks had subsided, leaving advanced deafness (Fig. 6).

Treatment

Good results have been obtained by both medical and surgical therapy. The most successful

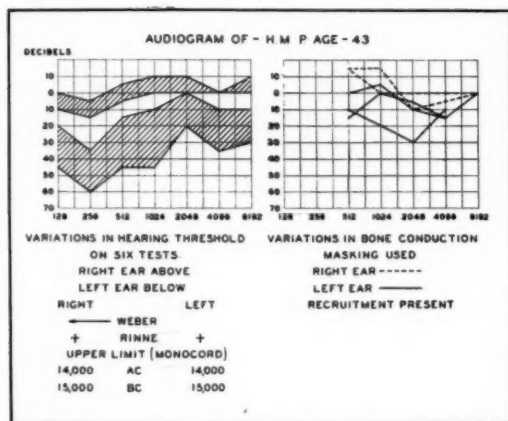


Fig. 5. Composite audiogram in Ménière's disease in the left ear. Threshold for high tones and upper limits well preserved. Bone conduction fluctuates directly with air conduction. Vertigo attacks, often postural, occurred for one year before hearing was affected. Vertigo relieved by Portmann's operation but fluctuations in hearing threshold still persist eighteen months after operation.

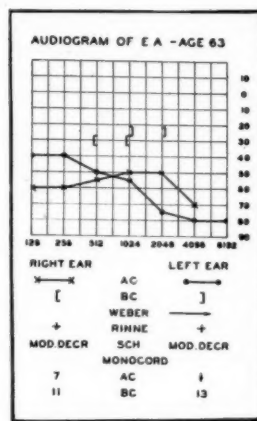


Fig. 6. Advanced deafness in Ménière's disease of eight years' duration. Attacks of vertigo absent for the past two years. Moderate fluctuations in hearing threshold and in tinnitus still occur.

frequently occur in the so-called "hypotonic" individual in whom the blood pressure tends to be low and to fluctuate widely. The basal metabolic rate may also be low and headaches, gastrointestinal disturbances and signs of vasomotor instability occur. This occurs frequently as early as the third decade. The attacks may occur only during a certain posture, such as lying on one or the other side, and may be present for a few days, then disappear.

In this particular group it is sometimes possible to localize the lesion with some certainty to the central nervous system because of the characteristics of the nystagmus, and in these the most likely explanation appears to be on a vasomotor basis.

The symptoms may disappear entirely or they may recur at intervals. A few cases of this type have been observed in which after as long as one year of vertigo attacks auditory disturbances appeared and the diagnosis of Ménière's disease became evident (Fig. 5).

It has been possible in some cases of Ménière's disease to recognize three stages: The first stage when only vertigo was present, the second stage when the complete syndrome was present, and

medical treatment has been on the basis of attempting to control the fluid balance. The discovery of hydrops of the labyrinth has provided a rational basis for this type of therapy. It has been possible to obtain good results in most cases by a combination of limitation of the salt intake, careful control and distribution of the intake of food and fluids, the administration of ammonium chloride as recommended by Furstenberg, or of potassium chloride (3 to 4 teaspoonfuls of a 25 per cent solution per day), along with adequate rest and mild sedation, if necessary.

Histamine therapy has apparently given temporary relief in some but has not met with general lasting success.

Inflation of Eustachian tubes has been quite unsuccessful in the true Ménière's cases in the author's experience.

Surgical treatment is justifiable in cases resisting medical therapy. Two types of surgical procedure have been used: some form of an operation on the labyrinth and an operation to cut the vestibular part of the eighth nerve.

Injection of the labyrinth with alcohol destroys function entirely and is, therefore, undesirable in patients with useful hearing.

Portmann's operation on the saccus endolymphaticus preserves the hearing but has not always given permanent relief to the vertigo.

More recently operation on one or more semicircular canals has been used with the desired result of stopping vertigo while preserving the hearing.

Section of vestibular division of the eighth nerve is also a sound and successful procedure in severe cases. It has the disadvantage of being a more formidable procedure with greater surgical risk. The recovery period is somewhat longer than with operation on the labyrinth.

Summary

The information obtained in recent years seems to have established the entity of labyrinthine dropsy (dilatation of the endolymphatic spaces) as the anatomico-pathological basis for the well known syndrome of attacks of vertigo associated with fluctuating auditory disturbances. While considerable confusion has existed as to the proper use of the terms Ménière's syndrome or disease, it now seems clear that if the term Ménière's disease is to be retained it should be applied only to the disease of the inner ear herein discussed.

THE CONTROLLED ADMINISTRATION OF FLUID TO SURGICAL PATIENTS

Including Description of Gravimetric Methods of Determining Status of Hydration and Blood Loss During Operation

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IT MIGHT appear that any instruction in the matter of administration of fluid to surgical patients is wholly superfluous. Until the studies of Collier and his associates from the University of Michigan focused the attention of the surgical profession upon common flagrant abuses in the administration of fluid and electrolytes to patients, it was a general feeling amongst surgeons that no particular problem hinged about this item. Pediatricists, who deal with infants, have been alive to the importance of the problem for some time. The studies of Gamble, McQuarrie and Hartman and their associates upon fluid and mineral requirements are well known. The work of Collier and his associates aroused surgeons from their apathy with reference to the importance of fluid administration and most of us are now alert to its significance during convalescence after operation.

There are essentially four problems which bear upon the issue of the fluid requirements of patients undergoing operation: (1) water requirement; (2) electrolyte needs; (3) blood loss factor; and (4) caloric and nitrogen requirements of the patient.

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Water Requirements

In the administration of water to a patient after operation, the surgeon may fall into errors of giving either too much or too little. Both mistakes may be followed by grave consequences. Patients with severe dehydration may exhibit shock and may die because of lack of enough available water to supply tissue cells with the requisite amount of fluid. The administration of too much fluid is particularly hazardous in the older age group patient with impaired cardiac reserve. Increases in blood volume, owing to too rapid as well as the administration of too much fluid, may provoke cardiac failure and pulmonary edema. Surgeons, unwittingly, when they were striving to lengthen life have undoubtedly shortened many lives in being delinquent on this score. Most of our postoperative therapeutic directives have been set up with the young person in mind, whose latitude of tolerance for abuse is great. The patient of three score years and more with poor cardiac reserve has a very narrow margin of toleration. The surgeon must learn not to trespass beyond those narrow marginal limits.

When the patient hydrates himself by drinking water, satisfaction of the sense of thirst is, in the main, a fair criterion of the status of hydration. When, however, with an intubated duodenal tube in place, hydration is accomplished by

CONTROLLED ADMINISTRATION OF FLUID—WANGENSTEEN

parenteral methods, the most readily available guide to the status of hydration is the urine output and the specific gravity of the urine. In the Surgical Clinic at the University Hospitals,

for hemoglobin, hematocrit and plasma proteins will solve the issue in such an instance—especially if pre-operative values are available as a basis for comparison. In our clinic, we have

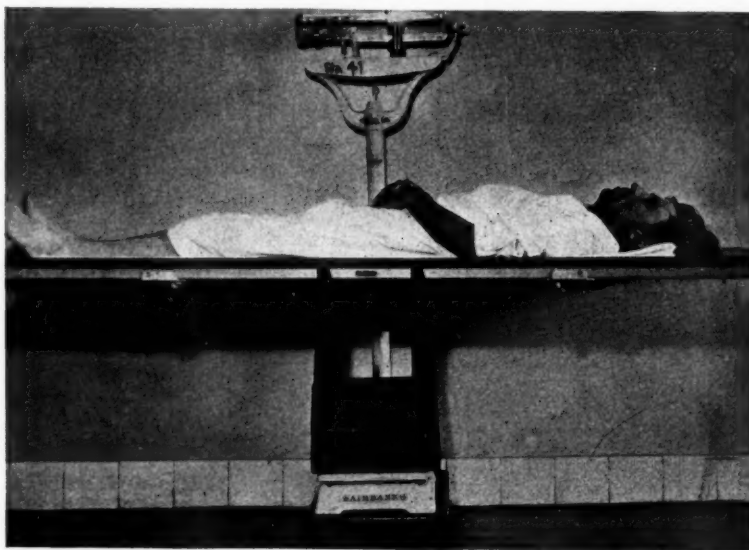


Fig. 1. Use of the weighing scale in determining the status of hydration of postoperative patients. The patient is weighed daily before operation, immediately after operation and again each morning before the intravenous administration of fluids is begun. (This practice should appear attractive to the cardiologist in following the status of hydration in decompensated patients—the block on the scale should support a chair, instead of a litter for such orthopedic patients.) This scale will weigh to an accuracy of 100 grams. (*Surg., Gynec. and Obstet.*,¹⁴ 72:257, Feb. 15 (2A), 1941, and *Intestinal Obstructions*,¹⁵ 1942, p. 243.)

a daily urinary output of 800 to 1,000 c.c. with a specific gravity within the normal range of 1.012 to 1.020 is looked upon as providing ample assurance that the fluid requirements of the patient have been met. The more trying problem concerns the patient who, it is believed, has received enough fluid to maintain a satisfactory fluid balance, but who exhibits an oliguria, excreting only a small amount of urine each day, during the first few days after operation. Almost all surgeons are familiar with this occurrence; moreover, all surgeons are very apprehensive over the item of oliguria and anuria. When a patient excretes, after operation, 350, 200 and finally less than 100 c.c. of urine on successive days, despite an adequate intake of fluid, the surgeon has adequate grounds for real anxiety. Most surgeons solve this problem by continuing to give more and more fluid, believing that the patient is dehydrated and reasoning that the lost fluid is being shed through the skin. There are those who insist that, determination of the values

solved this problem by weighing routinely all patients following major operations^{14,15} (Fig. 1). If the preoperative weight has been exceeded and enough fluid has been given so that a satisfactory urine output reasonably could be expected and oliguria continues, there is no need to give more fluid. The continued administration of fluid to such a patient will cause cardiac failure, pulmonary edema and death. Prior to instituting weighing patients as a means of following intelligently the status of hydration, I confess to having brought about cardiac failure and fatal drowning of several old, poor risk patients with low cardiac reserve, when the patients were oliguric during the early postoperative period. I have the impression that other surgeons have fallen into the same error, especially those who have lent an attentive ear to meaningless claptrap catch phrases as "push fluids" and other equally euphonious but empty expressions. Weight increases of 4 to 5 per cent over the patient's pre-operative weight speak significantly for over-

hydration of the patient. I have the definite feeling, despite the obviously gross character of this differential criterion, that the weighing scale is the most *precise* manner of ascertaining the status of hydration in postoperative patients—more accurate than determinations of hemoglobin, hematocrit and plasma proteins. As a matter of fact, I have seen such oliguric patients after operation in which ascertainment of the status of hydration by the criteria just enumerated suggested that the patient in question was dehydrated and needed more fluid. Proponents of physical measures for determination of whether hemodilution or hemoconcentration is present in a given oliguric postoperative patient would disregard the weights of the patient if that data did not tally with theirs. I have learned to have far more reliance on the trustworthiness of the pre- and postoperative weights as the best guide to the status of hydration. When a patient continues oliguric for several days and his weight has exceeded the pre-operative weight by 3 to 4 per cent, the administration of more fluid will usually provoke pulmonary edema. Next to regurgitation from the stomach into the lungs, the most common cause of postoperative pneumonia is probably administration of too much fluid.

Dehydration may accompany prolonged vomiting, the use of the indwelling duodenal tube without adequate replacement of fluid aspirated, diarrhea and abnormal sweating, and profound diuresis provoked by the too rapid administration of hypertonic glucose solution. Dehydration is a condition more amenable to correction, in the main, than is overhydration carried to the point of inviting pulmonary edema in patients with a poor margin of cardiac reserve. Collier and Maddock⁴ state that, in patients presenting *manifest* evidences of dehydration, 6 per cent of the body weight has been lost and that amount of fluid should be given.

Electrolytes

What kind of fluid should be given? I believe it is fair to suggest that surgeons have been somewhat indifferent on this score. It has not been uncommon practice amongst some surgeons to give all paraoral fluids in physiological saline solution. The error of such practice is not difficult to detect. Normal saline solution, unlike water and hypertonic solutions, does not afford the kidney a vigorous impetus for the ex-

cretion of urine; in consequence, water and salt are eliminated slowly and retention of sodium chloride and water occurs. For every gram of sodium chloride retained and not excreted, 100 c.c. of water is retained. The daily administration of 2 to 3 liters of saline solution is, therefore, bound to terminate in salt retention and edema. Obviously, not more salt should be given than is requisite to meet the body needs.

Whereas surgeons must rely on a number of guides to determine the amount of water a patient needs (thirst, urine excretion, determination of status of hemoconcentration and gross body weight), there are direct means of knowing whether a patient has had enough salt. Sodium chloride is a threshold substance and when given in more than adequate quantities, it is eliminated in the urine;⁹ daily excretion of 2 to 3 grams of sodium chloride in the urine suggests that enough salt has been given. The most accurate index of sodium chloride balance is determination of the plasma chloride level. Normal values for sodium chloride in the plasma lie between 560 and 600 milligrams per cent. Collier and his associates have suggested, in conditions attended by hypochloremia, such as pyloric obstruction associated with vomiting, that, for each 100 mg. per cent the plasma chloride needs to be raised to reach the normal value of 560 mg. per cent, the patient be given 0.5 gram of sodium chloride per kilo of body weight. In a patient weighing 70 kilos and in whom the plasma chloride value is found to be 460 mg. per cent, the patient will need $560 - 460 = 1 \times .5 \times 70 = 35$ grams sodium chloride. These predicted calculated values coincide quite accurately with clinical trials. It is not to be forgotten, however, that man has no apparent appreciation of a bodily need for sodium chloride. Whenever imbalance of the sodium electrolyte equilibrium may be present, it is up to the surgeon to detect this deficiency.

For the ordinary postoperative patient, 5 to 9 grams of salt daily suffices. Salt lost through the agency of aspiration through an indwelling duodenal tube averages about 5 grams per liter; salt lost by perspiration about 3 grams per liter; the salt loss in insensible perspiration is negligible. Anesthetized patients notably lose considerable fluid by perspiration because of the vasodilating effect of anesthesia on the skin capillaries. In spinal anesthesia, this effect is noted only below the level of anesthesia.

Necessary fluid, beyond the requirements of sodium chloride given in physiologic saline solution, should be given as glucose solutions. In the main, there is little need to employ repair solutions other than saline solution in the management of disturbances of the electrolyte pattern of the plasma and interstitial fluid compartment. In contractions of fluid in the extracellular compartment (plasma and interstitial fluid), it is the sodium (cation) and chloride (anion) relationship which may be disturbed seriously. Neither the sodium nor the chloride ion have an available source for replenishment from within the organism; consequently they must be supplied. No matter which ion has been lost preponderantly—whether the chloride ion (alkalosis) or the sodium ion (acidosis), on the administration of saline solution the normal sensitive kidney will regulate the retention and excretion of electrolytes in such a manner that a normal extracellular fluid volume will be restored with correction of temporary defects in the composition of the electrolyte pattern. In severe dehydration, renal injury is not uncommonly present. In this circumstance, the liberal administration of a dilute glucose solution will assist in adjusting the diminished plasma volume, providing at the same time surplus water to aid the kidney in eliminating the ion is present in excess.

On the surgical service, we have followed these suggestions of Gamble, employing solutions of salt and glucose to repair contractions in extracellular fluid and electrolyte disturbances, with complete satisfaction. We have had next to no experience with the use of the more elaborate Ringer-Tyrode or Hartman repair solutions. Only in acidosis, a third agent, sodium bicarbonate solution (5 per cent) has been used to help restore contraction of the plasma bicarbonate.

The oral intake of a patient with an inlying duodenal tube is aspirated almost in entirety. All patients having gastric suction must be hydrated by para-oral means, either by the subcutaneous or the intravenous route. In the main, proctoclysis is a little too uncertain to be relied upon. In giving intravenous infusions, unless to patients exhibiting the contracted blood volume of dehydration or shock—all such infusions should be given slowly, lest the work of the heart be increased appreciably.

Blood Loss Factor

A brisk bleeder, loose in a deep wound for a minute, can pyramid blood loss astonishingly. During those few anxious moments, more blood may be shed than through the whole ordeal of a lengthy and trying operation, in which the surgeon's aim is to do the job well and with minimal spillage of blood. The surgeon who has a penchant for operating in a bloody field and who cuts vessels before they are secured by hemostats instead of after, finds that his patient cannot tolerate long operations. Unwittingly, therefore, he perpetuates the tradition of pre-anesthetic days that operations must be done with despatch. When surgeons quit repeating such fictional myths and discover the cause of their own deception, surgery will have taken a definite step forward.

For a period of many months, it has been routine practice with the writer to employ dry sponges during operation. This permits the surgeon to determine the blood loss to an accuracy of a few grams. The complete increment of gain in weight is calculated as blood loss, even though some of the gain in weight of sponges used in peritoneal or thoracic operations, is owing to absorption of fluid with a protein content of 2 to 4 grams per cent. It might appear that the use of dry sponges imposes a serious handicap on the surgeon. Experience suggests definitely that it does not. However, large packs which are employed to cover the intestine are kept moist to keep fibrin formation on the bowel at a minimum. Such sponges are counted but not weighed. The usual blood loss in a gastric resection runs between 300 and 500 c.c. A single brisk bleeder augments the blood loss decidedly.

The precision of gravimetric methods, such as weighing sponges, as well as the patient himself, affords the surgeon helpful orientation concerning what he must do to accord his patient maximal protection. At any time during the operation, the surgeon can inform himself of what the blood loss has been up to that juncture. Because of the lack of reaction attending the administration of plasma, the writer prefers it to blood. In each operation of any magnitude, plasma is allowed to run into one of the patient's leg veins in such a manner that when the operation is over, the patient has received 100 to 200 c.c. more plasma than the total increment of gain in weight of the sponges. There are hazards of

CONTROLLED ADMINISTRATION OF FLUID—WANGENSTEEN

over-replenishing blood loss as well as in failure to replace it adequately. Aged, poor risk patients with impaired cardiac reserve should not be asked to withstand increases of blood volume as well

starvation are well withstood. Whereas maintenance of caloric balance is important for the postoperative patient, it is of even greater importance to the patient who awaits operation, es-

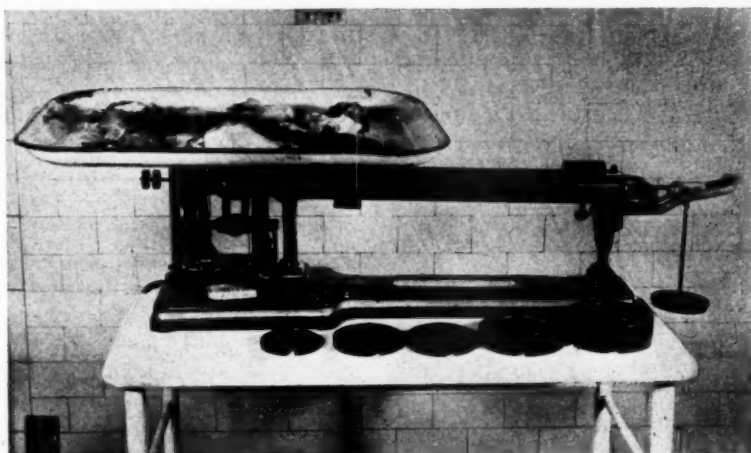


Fig. 2. Use of the weighing scale in determining blood loss during operation. At any juncture, the surgeon may know how much blood has been lost. The surgeon must, of course, employ dry sponges. This scale will weigh to an accuracy of 1 gram.

as operation. At the same time, the actual blood loss must be made up so that the patient does not have to tolerate both operation and blood loss. The planned procedure with a watchful eye to every detail is the best assurance against the perils of operation.

Large blood losses are to be replaced preferably by blood. When multiple transfusions become necessary, it is a good plan to follow the suggestions of DeGowin, providing an alkaline urine by the intravenous administration of sodium bicarbonate solution (250 c.c. of 5 per cent solution). It is DeGowin's contention that albuminous casts are less likely to form in the renal tubules, attending hemolytic reactions, if the urine is alkaline.

Maintenance of Caloric and Nitrogen Equilibrium

Surgeons have been very remiss in meeting the caloric and nitrogen requirements of patients during recovery from operation. Enough glucose is given ordinarily to offset the ketosis of starvation—but not enough to meet the energy requirements of the patient. Surgeons have been abetted in this dereliction by physiologists who have emphasized repeatedly that temporary periods of

pecially the patient who has lost weight because of inability to take food. The patient with long continued complete pyloric obstruction exhibits the extremity of difficulty confronting the surgeon in preparing such a patient for operation by intravenous therapy. During the ketosis of starvation, the glycogen and protein deposits in the liver are exhausted and fatty infiltration occurs. Patients with fatty livers are notably poor risks for operation. Ravdin and his associates have demonstrated that a combination of a high protein and carbohydrate diet given by mouth is particularly efficacious in removing fat from the liver and replenishing the normal glycogen and protein deposit stores. Whereas similar studies on intravenous feedings are not available, experience gained in this clinic by operating on patients with long standing pyloric obstruction, prepared for operation by trying to meet caloric and nitrogen requirements, suggests that patients can be prepared by intravenous therapy alone, if need be, to withstand formidable operations lasting four to six hours.

Elman and Brunschwig and their associates appear to have demonstrated that nitrogen equilibrium may be maintained by the intravenous administration of commercially available amino

acids alone (amigen) combined with the use of liberal quantities of carbohydrate as a protein sparer. From Brunschwig's tables it is easily apparent, however, that a positive nitrogen balance (nitrogen retention) was more easily sustained if protein was given by mouth. Our own attempts to date at achieving nitrogen balance with intravenous injection of amino acids (preparation of F. Stearns or Mead Johnson) as the sole source of nitrogen intake have not been in accord with those findings, *viz.*, we failed to observe nitrogen retention and found a high excretion of nitrogen in the urine and note that our patients were in negative nitrogen balance despite liberal use of carbohydrate as a protein sparer. We had observed previously,¹³ however, that nitrogen balance may be achieved by the intravenous injection of plasma protein. Five hundred to 600 c.c. of plasma a day (40 grams protein) suffice to establish nitrogen equilibrium though we failed with 75 grams of amino acid protein. It is probably debatable, however, whether it would be wise to give 40 grams of plasma protein intravenously day after day, lest the infusion of this iso-osmotic colloidal solution increase the blood volume and the venous pressure and invite heart failure.

Our practice has been to give 1,500 c.c. of a 20 per cent glucose solution intravenously over a ten- to fifteen-hour period. With this slow rate of injection, daily quantitative studies of the urine show practically complete utilization of the sugar injected. The disadvantage hedges about thrombosis of the veins with such concentrated glucose solutions. Yet, recognizing the need of meeting at least the basal caloric requirements of the patient, and not wishing to give too much fluid to poor risk patients, we have continued to follow this practice and have observed no untoward effects from its use other than occasional thrombosis of the veins. About 75 grams of amino acid protein is injected intravenously daily and 100 to 200 c.c. of plasma. An approximation of caloric and nitrogen balance can be achieved by these means.

To be sure, as Ravdin and his associates have emphasized, if the patient can take food by mouth, the preparation of a patient for operation by oral feedings is considerably more effective than by intravenous feedings. In poor risk patients who have lost considerable weight, not exhibiting complete pyloric obstruction, we employ

the constant intragastric drip (day and night), giving about 90 to 100 c.c. an hour of a high protein and carbohydrate and low fat mixture of food (Varco gastric diet No. 2).

This method of preparation of the patient excels intravenous feedings in simplicity and effectiveness considerably. Yet, there are patients in whom the method is not applicable. Furthermore, we have had now the experience of preparing several patients with complete pyloric obstruction exhibiting large weight losses for extensive gastric resections by the intravenous therapy alone. The mortality of resection for ulcer in this clinic (exclusive of the acute perforation and the bleeding ulcer) has been approximately 1 to 3 per cent during the past few years. The mortality of resection for malignancy during the same interval has hovered about 8, 10 and 12 per cent. It was reasoned that this difference in risk was explained satisfactorily by the age disparities of the ulcer and carcinoma groups. During the past year, however, with increased emphasis on trying to prepare the poor risk carcinoma patient adequately for operation by feeding, we have erased largely the difference in mortality between the two groups. In thirty-nine consecutive resections for malignancy of the stomach during the past twelve months,* only one patient died in hospital—a total gastrectomy in which unfortunately a small gauze sponge was left in the peritoneal cavity, the patient dying of intraperitoneal abscesses more than eight weeks subsequently. In this group of patients with gastric carcinoma were several whom in former years we would have lost because of failure to meet adequately caloric and nitrogen requirements.

Summary and Conclusions

By proper attention to the controlled administration of fluid to surgical patients, the indications for many operations may be extended to the poor risk patient without increasing the risk materially. The items with which the surgeon must concern himself relate to the following: (1) water requirements of the patient; (2) electrolyte needs; (3) the blood-loss factor in operation, and (4) the caloric and nitrogen requirements of the patient.

It is suggested that the surgeon interest himself more in precise means of determining

*September 1, 1941, to September 1, 1942—Total hospital mortality 2.56%.

whether these needs of the patient have been satisfied. The experience of this clinic suggests that weighing the patient is the most precise method of determining the status of hydration of the postoperative patient. Similarly, employment of dry sponges during operation permits the surgeon to employ the weighing scale to gauge accurately the extent of the blood loss.

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CLINICAL ASPECTS OF BRANCHIAL FISTULÆ

With a Case Report of Bilateral Complete Branchial Fistulæ

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BRANCHIAL fistulæ, sometimes called lateral cervical fistulæ, lateral vestigial ectodermal or entodermal fistulæ, branchiogenic fistulæ or persistent branchial clefts have been known as a surgical entity for over one hundred and fifty years. These are congenital fistulæ and present a considerable variety of clinical findings. Even though there has been a great deal of investigation and observation reported in the literature, there is very little agreement as to the exact origin of these fistulæ.

The first reports of congenital cervical fistulæ were made by Hunczowski¹⁰ in 1789 and by Dzondi¹⁰ in 1829. The existence of branchial clefts in mammalian and human embryos were first accurately described by von Rathge¹¹ in 1825.

In 1832 Von Ascheron⁷ published his "De Fistulis Colli Congenita" in which he reported eleven cases of congenital neck fistula. He definitely recognized the inner orifice as pharyngeal and not tracheal and distinguished between medial and lateral fistulæ. It was the first time that the lateral cervical fistulæ were associated with the incomplete closure of the branchial clefts.

Von Heusinger¹¹ in 1864 believed that the in-

ternal orifice of all fistulæ was situated on the lateral wall of the pharynx at the base of the tongue. He was of the opinion that the location of the external fistulous opening determined the cleft at fault and that the fourth cleft was responsible when the orifice was at the sterno-clavicular junction.

In 1887 Rabl¹⁶ described the formation of the branchial clefts and the cervical sinus showing how they were obliterated by the apposition of ectoderm with ectoderm which resulted in the disintegration of cells. He demonstrated that the second cleft was much more apt to persist embryonically because of its greater depth and came to the conclusion that the second cleft and its attachments are almost invariably at fault in the formation of branchial anomalies.

Von Kostanecki and von Mielecki¹¹ when studying this subject in 1890 found the most frequent and constant internal opening of fistulæ to be located in the suprathoracic fossa and concluded this corresponded with the second cleft. They believed that the complete fistula originated from a rupture in the cervical sinus of the second pharyngeal pouch.

Wenglowski,²⁰ a Russian embryologist, in 1912, after a five-year study on seventy-eight human embryos and 246 cadavers, concluded that the

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lateral cervical fistula originated from the thymopharyngeal duct which develops from the third pharyngeal pouch. He believed that the branchial apparatus could not leave remnants in the neck below the hyoid bone.

Frazer⁹ in 1924 presented the possibility that branchial rests and fistulæ developed from the "ectodermal external pharyngeal ducts" or the "entodermal internal pharyngeal ducts" which are embryologic structures of the branchial apparatus. He postulated that the placodal bodies or epithelial bodies in the branchial or visceral grooves might be the source of vestigial cervical anomalies.

The branchial apparatus begins to develop in the human embryo in the third week. By the end of the second month the structure has disappeared. On each side of the neck region there appear five bars or branchial arches separated by depressions or branchial grooves. These are covered with ectoderm. In the foregut there develop corresponding bars or pharyngeal arches and depressions or pharyngeal pouches, which are covered with entoderm. Mesoderm separates the ectoderm and entoderm in the branchial apparatus except where the branchial pouch and pharyngeal pouch approximate each other and there the ectoderm and entoderm are together forming the separating membrane. Each arch contains a cartilaginous core, a primitive aortic arch and a nerve. These persistent structures serve to identify the site of origin or any given fistula when their relationship is determined.

The first and second arches grow more rapidly than the others and overlap them. A recess is formed called the cervical sinus or the pre-cervical sinus of His. At first the sinus opens wide laterally, but as the second arch grows downward the sinus opening narrows to a small duct and then becomes obliterated. The second, third and fourth branchial grooves communicate with the cervical sinus.

The theories of the origin of branchial fistula fall into two groups, namely, the branchiogenic theory and the thymopharyngeal duct theory. They are as follows:

A. Branchiogenic theory:

1. The rupture of the separating membrane producing a persistent branchial cleft.
2. An anomalous development of malformed branchial arches and grooves.
3. The incomplete retrogression of the branchial apparatus.
4. The persistence of the cervical sinus.

5. Remnants of the ectodermal external pharyngeal ducts or of the entodermal internal pharyngeal duct.
 6. Branchial rests from the placodal bodies or epithelial bodies in the branchial or visceral grooves.
- B. Thymopharyngeal duct theory—(Wenglowski²⁰).

Normally all the branchial grooves are obliterated except the first which, together with the separating membrane and the first pharyngeal pouch, develop into the external auditory canal, tympanic membrane, and Eustachian tube, thus nearly forming a normal fistula. The second pharyngeal pouch contains the anlage of the palatine tonsil. The internal opening of a cervical fistula which has developed from the second branchial groove should be in the tonsillar fossa. This is the site of the internal opening of the complete fistulæ in nearly all the reported clinical cases. The internal opening of the third pharyngeal pouch would be in the pyriform fossa and the internal opening of the fourth would be in the lower end of the pharynx. Internal openings of cervical fistulæ in these locations are very uncommon and there is some doubt if they ever occur.

A fistula bears definite and distinct relationship to the main vascular and nervous structures of the neck if their development is normal. These relations are facts and not theories and are absolutely fixed. A fistula having its origin from the second branchial groove passes between the external and internal carotid arteries and in front of the vagus nerve. The course of a fistula from the third groove goes behind the common or internal carotid arteries and in front of the vagus nerve. A fistula originating from the fourth branchial groove would have to go around the arch of the aorta on the left side, and around the subclavian artery on the right side. Frazer⁹ states that the only ones that have been recognized with certainty are those from the second.

This discussion of the clinical features of branchial fistulæ is based upon the review of 107 case reports appearing in the surgical literature, and the following case of bilateral complete fistulæ.

Case Report

A white male, sixteen years of age presented himself at the surgical dispensary of Wells Memorial House complaining of discharge from two openings on the front of the neck. The two small openings had been present since babyhood. The mother stated that drops

BRANCHIAL FISTULÆ—ANDERSON

of milk would appear on the neck from each opening when he nursed. There had been no other particles of food that had come from the openings. There never had been any soreness about the openings or in the neck. The mother and the boy had never noticed any swelling in the neck.

The discharge was usually a clear thin fluid which kept the skin of the neck moist. At times the fluid was yellow and sometimes had a foul odor. Eating did not produce any change in the amount of fluid which drained.

He had measles when one year of age, chicken pox when three and German measles when seven years old. At the age of ten years he had a tonsillectomy. Since then he has had no sore throats. Previously he had not had any swelling or masses in the neck.

The mother, the father, and an only brother twelve years old, had no abnormalities in the neck. The mother stated that she did not know of any relative on either side of the family that had any neck abnormality.

Examination revealed a well developed, well nourished boy, 138 pounds in weight and five feet seven inches in height.

On the anterior surface of the neck there were two pin-point openings, each symmetrically placed at the anterior border of the sternocleidomastoid muscle one inch above the sternoclavicular articulation. From each opening a thin clear fluid drained. A firm cord-like structure running parallel to the anterior margin of the sternocleidomastoid muscle could be palpated in each anterior triangle of the neck from the opening to the angle of the mandible. There were no enlarged cervical lymph glands. When the patient swallowed, each opening moved one-fourth of an inch upwards in the neck.

The mouth and pharynx appeared normal. There were no irregularities visible. The tonsillar fossae were clear. The physical examination was otherwise negative.

Laboratory examination revealed a normal urine and blood picture. The Wassermann test was negative.

Roentgenograms were taken of the cervical region after the injection of lipiodol into each opening. Dr. Russell Morse, the roentgenologist, concluded that the sinus tracts passed superiorly from the external openings to the level of the base of the tongue on both sides and apparently the tract on the right side was higher than that on the left.

After the injection of the lipiodol the pharynx was inspected and no lipiodol was seen to have passed into the pharynx.

The patient was admitted to St. Barnabas Hospital during the Christmas vacation in 1934. On the operating table each opening was injected with methylene blue solution which appeared in the pharynx from each side through a small opening that was located on each posterior tonsillar pillar at the junction of the superior and middle thirds.

The left complete branchial fistula was operated first according to plan and the dissection of the right complete branchial fistula was done later. It was thought that a deep dissection of the neck could be better tolerated if one side at a time were done. If a com-

plication were to occur, such as infection, it would be easier to manage in case of a unilateral dissection.

A purse string suture was placed around the left external orifice and tied. A cuff of skin was excised with the external orifice. A longitudinal oblique incision was made over the fistulous tract from the external opening to below the angle of the mandible. The incision was carried through the skin, platysma and cervical fascia, exposing the fistula. The fistulous tract was dissected from below upward. The tract was located anteriorly and laterally to the carotid sheath. At the level of the hyoid bone the tract angulated toward the pharynx. The fistula passed under the posterior belly of the digastric muscle and between the external and internal carotid arteries. The glossopharyngeal, the vagus and the hypoglossal nerves were not visualized. The dissection of the fistula was carried to the pharyngeal mucous membrane. The inversion of the fistula at the internal orifice was carried out according to the method of von Hacker.¹⁹ The fistula was bisected leaving a half inch segment attached to the pharyngeal mucous membrane. A probe was passed through the internal orifice and fistula. The end of the fistula was attached to the probe and the fistula inverted into the pharynx when the probe was withdrawn. The fistula was ligated flush with the mucous membrane. The neck wound was sutured with interrupted sutures. A penrose drain was placed in the superior angle of the wound.

The right complete branchial fistula was operated during another vacation four months later. The same condition existed as was found on the left side. The same procedure was carried out. In attempting to invert the fistula at the internal orifice it was avulsed at the pharyngeal mucous membrane. The defect in the mucous membrane was repaired by two interrupted sutures.

The patient recovered uneventfully after each procedure and was discharged from the hospital each time on the fourth postoperative day.

Microscopic sections of the fistulæ were examined by Dr. Floyd Grave, the pathologist, who reported that the tract was lined with squamous and columnar epithelium. In some areas the columnar epithelium was ciliated. The epithelium was destroyed in places and replaced by scar tissue. Some sections showed a marked round cell infiltration of the wall of the fistula.

It has been seven years since the operation, and there has been no recurrence. The patient offers no complaints relative to the neck.

Although branchial fistulæ are congenital in origin only a small number are found at birth. They may appear at any time from childhood into adult life. Most of them make their appearance before the age of thirty. The delayed cases may represent internal incomplete fistulæ that break through externally or branchial cysts that break through or have been incised and allowed to drain forming an external draining sinus.

The fistulæ occur with about equal frequency on either side of the neck. There were 45 per cent on the right side and 47 per cent on the left, and 8 per cent were bilateral. In Ladd and Gross¹⁴ series, 37 per cent were on the right side, 58 per cent were on the left and 5 per cent bilateral. Hyndman and Light¹¹ found the right side involved in 52 per cent, the left in 31 per cent and bilateral in 17 per cent.

As to sex, the cases were about equally distributed between males and females. There were 44 per cent in males and 56 per cent in females. Hyndman and Light's¹¹ series closely parallel this, having 47 per cent in males and 53 per cent in females. Lahey and Nelson¹⁵ in their series reported a preponderance of cases in females, namely 70 per cent. These findings tend to refute the statement appearing so generally in the literature that branchial fistulæ are most frequent in females and that they are found on the left side in the majority of cases.

There seems to be hereditary tendency in some cases of branchial fistulæ. This is brought out only in the occasional case in most of the reported cases. It was observed by Virchow¹¹ in 1865 when he reported the condition occurring in a mother and her eight children; in a mother and her son in three instances; in a mother and daughter and two sisters, a brother and a maternal grandmother in one instance. Vaughn⁷ observed a young woman with bilateral fistulæ who had a daughter and a sister with fistula on the left side and a grandmother with one on the right side. Hyndman and Light¹¹ reported fistulæ occurring in a mother and in three of her five children. They concluded that the condition was inherited through the mothers, there having been no instance reported through the father. One of Carp and Stout's⁶ cases, however, was a girl with bilateral fistulæ whose father, brother and female cousin on the father's side had bilateral fistulæ. In 100 collected cases Fischer⁶ noted twenty-one with a hereditary tendency. This I believe is a rather high incidence. Bailey,¹ surgeon at the Royal Northern Hospital of London, who has had a large experience with branchial fistulæ, has had none with a hereditary factor.

Branchial fistulæ are classified as to type as follows: (1) *complete*, where the fistulous tract has an external opening on the surface of the neck and an internal opening in the pharynx;

(2) *external incomplete*, where there is only an external opening on the neck and the fistulous tract ends blindly in the neck structures; and (3) *internal incomplete*, in which there is only an internal opening in the pharynx and the fistula ends blindly in the neck. The complete fistula is the prototype and the others are the variants. The most common form is the external incomplete, and the rarest is the internal incomplete. There were 47 per cent of the external incomplete type, 39 per cent of the complete and 11 per cent of the internal incomplete type. The fistulæ may be unilateral or bilateral. In the series of 108 cases of branchial fistulæ there were nine in which the fistulæ occurred bilaterally. The case reported above was the only one that had a complete fistula occurring on each side of the neck.

The internal incomplete fistula is usually not found unless some complication occurs such as inflammation of the tract or retention of the secretory products of the tract lining which produces a swelling. A tonsillectomy may initiate the inflammatory reaction in the fistulous tract which has its opening in the tonsillar fossa. A swelling occurs in the neck that must be differentiated from an adenitis. Internal incomplete fistulæ which have produced this clinical sequence have been reported by Bailey¹ and Johnson.¹²

The external opening of these fistulæ occurs usually in the anterior triangle of the neck along a line running from the angle of the mandible to the sternoclavicular articulation. In 80 per cent of the cases the opening is in the lower third of the neck. However, the site of the opening may be any place from the level of the hyoid bone down to the sternum. The situation of the external opening is thought to be determined by the time in the embryonic life when the fistula had its origin. If it starts early in the development of the branchial apparatus the external opening will be higher in the neck than if its origin is later. It is uniformly agreed that the position of the external opening does not indicate what branchial or visceral groove was involved in the formation of the fistula. Variation from the usual location of the external opening in complete fistulæ has been noted. Semken¹⁰ reported a case where the external opening occurred on the side of the neck posterior to the sternocleidomastoid muscle. Atypical openings may represent internal incomplete fistula that

break through to the outside of the neck because of inflammatory changes.

Usually the fistulous openings have a single orifice. An interesting case was reported by Virchow¹¹ in which the fistula had multiple small openings on the right at the junction of the sternocleidomastoid muscle and the clavicle.

The external opening varies in size from a small pin-point orifice to 2 or 3 millimeters in diameters. The opening may be surrounded by pigmented skin. Cases have been reported which present a dimpling or a tab of skin containing cartilage at the external orifice. The external opening is usually of a smaller calibre than the fistulous tract above it. Inflammatory edema may occlude the opening and secretory and inflammatory products are thereby retained in the tract.

The drainage that occurs on the neck is the symptom for which these patients practically always seek relief. The drainage discharge may be a clear tenacious mucous or a turbid white or yellow fluid. The turbid fluid may be due to the desquamated epithelial elements or to the presence of pus in the infected cases. The drainage may be a continuous small amount or in some cases, an intermittent and more abundant amount. In complete fistula, fluids or solids may pass from the pharynx to the outside of the neck depending upon the calibre of the tract. Lesser⁷ observed a man with a complete fistula who could pass a curved probe from inside of the pharynx to the outer opening just above the sternoclavicular articulation, and withdraw it.

In those fistulæ which are adherent to the vagus nerve or which contain some of the vagus nerve fibers, the patients may present symptoms due to vagus irritation. A chronic nonproductive cough may be produced. Such a cough was relieved when Carp⁸ excised a fistula that was adherent to the vagus nerve. Hyndman and Light¹¹ reported a case of branchial fistula in which coughing, palpitation of the heart and vomiting were produced when the tract was probed. That the vagus nerve may be involved and vagal symptoms produced should always be considered when cervical fistulæ are probed or injected.

In the majority of branchial fistula cases there are inflammatory processes present. The external and internal orifices favor the introduction of infection, and the occurrence of inflammation in the tract or in the perifistulous tissues will bring

these patients to seek relief. The discharging orifices become reddened and tender. A tender cord-like structure may be produced in the neck or when a small orifice becomes obstructed, a mass may occur. Such a mass may vary in size because of an intermittent draining and emptying. An interesting case of an internal incomplete fistula was reported by Eddowes¹ in a nurse thirty years old in whom the fistula became periodically filled with purulent material. The toxic material undermined her health, causing a marked loss of weight. The condition was unrecognized for some time. When the fistula was removed she regained her health.

A fistula may be of various lengths. It may extend only a short distance, a few millimeters, from either an external or internal opening, or it may be a complete fistula. By the injection of colored solutions or solutions of recognizable taste it can be determined if an external orifice has a communicating tract with the pharynx. A colored solution may locate the position of an internal orifice which is usually hard to locate and many times is not recognizable. The extent and course of a tract can sometimes be visualized by injecting radiopaque substances, such as iodized oils or solutions or barium mixtures, and by taking roentgenograms of the neck region. The calibre and degree of sacculation of some tracts can be demonstrated. If the calibre of the sinus is small or narrowed in some segments it may be impossible to visualize the entire extent of the tract. Too much reliance should not be placed on a roentgenogram showing a partial fistula for the complete tract may not have been filled. Dowd⁸ visualized a complete branchial fistula by passing an opaque ureteral catheter and making roentgenograms. Hyndman and Light¹¹ utilized this procedure in one of their cases.

In the case of a complete fistula there will be, on deglutition, some recognizable changes in the external orifice. The fistulous cord will create traction on the orifice and adjacent skin causing it to move upwards or to retract, producing a dimpling. In most cases an indurated cord which runs upward from the external opening can be palpated in the neck.

Branchial fistulæ are usually lined with a well organized epithelium. In some a stratified squamous epithelium is found and in others the lining is made up of columnar epithelial cells which may be ciliated. Both types of epithelium

have been found in a single fistula. I cannot agree with those authors who state that the lining of fistulæ is always made up of columnar epithelium in contrast with branchial cysts which are always lined with squamous epithelium. Where there has been an inflammatory process in the tract the epithelium may be destroyed completely or in part and replaced by scar tissue.

The wall of the fistula contains areas of lymphoid tissue which may encircle the tract or be deposited in separate areas along the course of the fistula. Connective tissue and varying amounts of smooth and striated muscle fibres will also be found in the wall. In isolated cases there are nerve fibres, cartilaginous remnants and secretory glands in the wall of the fistula.

The fistulous wall usually is not uniform in thickness. It may be very thin in places and at other places thick. The lining membrane often has deep crypts or infoldings which produce a marked irregularity in the calibre. In some cases these crypts may be so deep that they appear as diverticula and extend away from the fistula. Carp and Stout⁶ observed a case where microscopic sections showed numerous accessory tracts lined with epithelium similar to the main tract and lying adjacent to it.

Branchial fistulæ must be differentiated from tuberculous adenitis with a sinus and from atypical thyroglossal duct fistula. A tuberculous sinus in the neck will usually be associated with several enlarged cervical lymph glands. The discharge from a branchial fistula will be mucoid or mucopurulent while in a tuberculous sinus it will be serous or seropurulent. In the case of a fistula, examination of the discharge may show the epithelial elements while in a tuberculosis sinus acid-fast bacilli may be found. By examining the external orifice with a hand lens the mucous membrane lining can sometimes be recognized in a branchial fistula while in the tuberculosis sinus there is no epithelial lining.

Thyroglossal duct fistula has occurred in one of the anterior triangles of the neck. The external orifice has been situated laterally from the midline which is not its usual location. The course of the fistula may be determined by probing or by taking roentgenograms after the tract has been filled with a radiopaque substance. The thyroglossal duct fistula will be associated with the mid portion of the hyoid bone while a branchial fistula lies laterally to the bone.

The treatment of branchial fistulæ is the total surgical extirpation of the tract. If this is not accomplished there is apt to be recurrence. The procedure may be easy or extremely difficult. A dissection of a short external incomplete fistula usually offers no difficulty. It must be realized that what may clinically appear to be a short fistula may be of greater extent when the dissection is attempted, and one must be prepared to carry out a complete dissection to the pharynx.

The operation may be performed through an oblique incision running parallel to the anterior margin of the sternocleidomastoid muscle. The incision is made directly over the tract and extends from the external orifice to the level of the hyoid bone if it becomes necessary to expose a complete fistula. Bailey¹ advocates the "stair step" incisions. An oblique transverse incision is made at the level of the external opening; a second one is made at the level of the hyoid bone. The tract is dissected upward underneath the skin to the second incision, the contention being that a better cosmetic result is obtained with these incisions.

To facilitate the dissection of the fistula, several procedures have been devised. The fistulous tract has been fixed by a probe or by a ureteral catheter. The fistula has been filled and distended by fluid, oil or paraffin. With the use of methylene blue the course of the tract can be ascertained and, if an irregularity is cut across, it will be easily visualized. Love⁴ encircled the external orifice with a purse string suture a few days preceding the operation to allow the tract to become distended with secretion.

In some cases to get adequate exposure of the upper end of the fistula as it approaches the pharynx, the fascia, covering the posterior belly of the digastric muscle, may be incised in the long axis to free the muscle belly from its inner sheath. The muscle can be retracted upward producing a wider space to carry on the deep dissection and making it easier to identify the vascular and nerve structures.

There is a difference of opinion as to what is necessary in removing the inner orifice of a complete fistula. Ladd and Gross¹⁴ consider it necessary to carry the dissection of the fistula only up to the mucous membrane of the pharynx and removing the fistula two or three millimeters from the pharyngeal mucous membrane and tying

it. Others remove the tract flush with the pharyngeal mucous membrane and do not consider it necessary to suture the area but allow the tissues to fall together. The inversion of the fistula, according to the method of von Hacker,¹⁰ was described in the case report. In cases where the perifistulous tissues are indurated and do not allow the inversion of the tract, a cuff of pharyngeal mucous membrane may be excised along with the internal orifice and the defect sutured. In fistulæ Koenig⁷ could not invert, he tunneled under the mucous membrane and placed a short segment of the tract anteriorly from the internal orifice. The opening of the short segment was fixed at the level of the pharyngeal mucous membrane leaving two fistulous opening connected with a short tract in the pharynx.

The contents of a fistula must be considered contaminated and spilling should be avoided. The dissection should be so carried out that the fistulous cord contains all of the tract and the dissection must be wide enough so that accessory ducts or irregularities are not cut across. The usual course of a complete fistula lies under the platysma and outer layer of the middle cervical fascia and upon the sternohyoid and sternothyroid muscles. The fistula courses laterally to the internal jugular vein and common carotid artery. At the level of the hyoid bone the fistula changes the direction of its course and angulates to approach the pharynx. At this level it passes beneath the posterior belly of the digastric muscle and between the external and internal carotid arteries which lie anteriorly and posteriorly respectively. The fistula passes over the hypoglossal (XII) and glossopharyngeal (IX) nerves and under the styloglossus muscle to end in the tonsillar recess of the pharynx.

It is generally agreed that the treatment of branchial fistula by the injection of escharotics is not dependable. It is practically impossible to inject a fistula so that the entire lining is in contact with the solution because of the infoldings of the epithelial lining and the occurrence

of accessory tracts. A narrowed segment may obstruct the filling of the tract. The thickness of the epithelial lining and of the wall of the fistula varies. Solutions necessary to destroy the thick portions will perforate the thin portions of the wall and cause inflammatory changes in the perifistulous tissues. Lahey and Nelson¹⁵ state that the danger of perforation of the pharynx by necrosis and the marked inflammatory reaction which may result are objections to this type of treatment.

Summary

1. A case of bilateral complete branchial fistulæ is reported.
2. A brief historical review of branchial fistulæ is given.
3. The embryology of the branchial region is reviewed.

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EVALUATION OF RECENT DATA ON BOILED LIVER EXTRACT METHOD OF TREATING ACNE VULGARIS

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SEVERAL recent articles have appeared in the current literature which have used the author's method of treating acne vulgaris with boiled liver extract. Boreen¹ concluded that the "treatment with boiled liver extract has been disappointing." This investigator had a series of cases which numbered fifty patients. Of these, twenty showed no improvement, twenty-three improved slightly, and seven were improved considerably. This work was completed in the University of Minnesota Students' Health Service, on presumably physically normal students. In all, thirty patients showed some form of improvement (60 per cent), while 40 per cent showed no signs of improvement.

In contrast to this series of findings on otherwise healthy patients, a recent article by Lichtenstein and Stillians has been published.² These clinicians chose tuberculous patients with concomitant acne vulgaris in order to put the author's method to a "rather severe test of the liver extract method of treatment," for they observed that "not only were we treating patients whose powers of resistance were lowered by disease, but we were competing with a diet ideal for the promotion of acne vulgaris." Their series of cases numbered fifty patients. They found that 21 per cent of the patients were greatly improved, 14 per cent were moderately improved, while 14 per cent were slightly improved, and 45 per cent received no benefit. They used no adjunct therapy during the test period. However, for the average run of cases, they advise combined therapy with such adjuncts as ultraviolet irradiation and lotions, since the liver extract method, when used alone, produces improvement slowly. These observers feel that they have demonstrated a definite action of the modified liver extract in certain cases of acne vulgaris in spite of a concomitant pulmonary tuberculosis.

A word of caution to future investigators may not be amiss at this moment. In a portion of the above series of cases, Lichtenstein and Stillians used a "modified" liver extract which was boiled.

It is important to stress the fact that this material, which they used, was prepared for them by Professor Farmer and myself in the Department of Biochemistry at Northwestern University Medical School. This particular fraction, which was supplied to these investigators, was prepared each week. It is not available through commercial sources, nor are facilities available at this time to supply other clinicians with a similar fraction.

Another point should be explained. There are numerous types of liver extracts on the market which are available to the profession. These products vary in their chemical and physical properties, and because of this reason, caution should be exercised in choosing the proper type of material to be used according to the boiling technique which has been advocated by the author.³ The various procedures which are employed by the various pharmaceutical firms in order to render their products more potent, as exemplified by the U. S. P. dosage, may remove the apparent factor which the liver extract contains and which apparently brings about clinical improvement when the material is administered to patients with acne vulgaris. In other words, if one wishes to employ the original boiling technique,³ it may be well to obtain the so-called *crude* liver extract, or the material which contains a minimum amount of U. S. P. units per cubic centimeter. Most of these crude liver extracts contain but one or two U. S. P. units per cubic centimeter. Such products can be obtained from the Eli Lilly Company, Lakeside Laboratories, from the Abbott Laboratories, or from other ethical and reliable pharmaceutical firms. If the above precaution is followed, perhaps much misunderstanding on this matter may be averted.

For my most recent investigations, I have been using a fraction which is different from that which was supplied to Doctors Lichtenstein and Stillians. It is hoped that this data, on this most recent research, may be made available in printed form in the near future. Suffice it to say at this time, these results appear promising and so far

OCULAR MANIFESTATIONS—LOOMIS

have been without untoward local or systemic reactions, which have been experienced previously with the use of crude and boiled liver extract.⁴ For this important reason, caution should be exercised if a patient becomes hypersensitive to any type of liver extract when it is administered parenterally. In such a case, further treatment with this medication is contra-indicated. However, further treatment with liver extract by mouth can be tried with care. Various suitable commercial oral liver extracts in a capsular form are available for this use.

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OCULAR MANIFESTATIONS OF SOME CONSTITUTIONAL DISTURBANCES

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IT IS a well-established fact that the eye is most important clinically for purposes of diagnosis. The physician often sees a patient who will, on first glance, call to mind some associated constitutional disturbance whether it be hereditary, endocrine, neurogenic, metastatic, or purely functional. Many of our patients complain about their eyes before other parts of the body become involved. To ignore these complaints and to overlook diagnostic points will often delay the physician in arriving at the proper diagnosis, whereas familiarity with some of the more common ocular conditions will many times give one a valuable lead.

During the year 1941, several patients presented themselves for treatment, complaining of difficult near and distant vision. A routine refraction brought out no evidence of any underlying fundus disease which would cause one to recommend blood and urine examinations or seek medical or neurological consultation. Vision in all but one patient was brought to normal with lenses and they were advised to return for a checkup after wearing the glasses. In all cases they returned as ordered, at intervals of two weeks to six weeks. The immediate reaction in three cases was to throw the glasses on the desk

and complain that they could not see with them. Examination revealed that vision had decreased markedly since the previous visit. Fundus examination was still normal but fields now showed a marked contraction. Search was then made for the primary cause of the patients' sudden loss of vision.

Case 1.—Q. N., white male, aged thirty-eight, by occupation a barber, was first seen on February 26, 1941, complaining of difficulty with close work. He was corrected fully for both near and distant vision. On March 10, he returned complaining that he was very uncomfortable. Vision was reduced to R. 20/60, L. 20/40. There was no fundus change to account for this sudden loss. He was sent to his family physician who found three plus sugar on urine analysis. Proper therapy was begun and immediate improvement was noticed. The difficulty for close work was due to temporary loss of accommodation brought on by the diabetes. It was necessary to cut the strength of his hyperopic correction nearly 50 per cent after which all complaints ceased. No visible ocular changes developed.

Case 2.—D. P., white male, aged fifty-five, had for many years been a well-controlled diabetic. In 1938, he had normal vision with glasses. In March, 1941, a routine refraction revealed a slight diminution in vision, R. 20/30, L. 20/25. His glasses were changed. Peripheral fields were practically normal. Because of the diabetic history, he was accustomed to having a complete physical checkup every year. This was done and nothing new found. On July 7, 1941, the patient re-

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turned complaining of inability to see with his glasses. Vision was now, R. 20/100, L. 20/50. Peripheral fields had not changed much but a central scotoma for red was found on the right. He had noticed difficulty in seeing at night and had trouble interpreting traffic lights.



Fig. 1. Case 4. Myasthenia gravis. Attempt is being made to wrinkle forehead causing a convergent squint of left eye.

Search into the history revealed that the patient had smoked eight to ten cigars daily for over twenty years and had been accustomed to having one or two high-balls every night for an equal period of time. Complete alcohol and tobacco abstinence was advised and the patient was given 50 mg. doses of thiamin parenterally and also large doses of B-complex orally. The improvement in vision took place quickly. Field changes improved more slowly. The latest examination in March, 1942, showed the scotoma still present but smaller. The vision had improved to 20/25 in each eye. The patient hadn't smoked for eight months, and had reduced his alcohol intake to a minimum. His only complaint was the fifteen-pound gain in weight from the improved appetite associated with Vitamin B therapy and cessation of smoking.

Case 3.—X. C., white male, aged forty-five, by occupation a barber, complained in October, 1941, of inability to cut hair well because of poor vision and he wanted a pair of glasses to relieve this. The usual examination for glasses revealed a presbyopic condition about normal for his age. The patient was instructed to use glasses for reading only. He returned in one month complaining that he could not use glasses as they made him sick. Field studies were made showing centrocaecal scotoma, typical of alcohol-tobacco amblyopia. Further history brought out the fact that the patient smoked two packages of cigarettes daily and was accustomed to having eight to twelve drinks daily for many years. A careful medical checkup was advised and revealed peripheral neuritis, an enlarged liver and marked nervous irritability. His physician instituted treatment for the alcohol-tobacco amblyopia similar to that in Case 2. He was also placed on a high fat, high vitamin diet, and hospitalized for two weeks to get him into a suitable regime. Improvement was slow and it was not until February, 1942, that

the patient was able to resume his normal duties. He reported in March that he was feeling fine and having no more trouble. This is too short a period of observation, however, to feel sure of the outcome.

Case 4.—Mrs. E. L., white female, aged forty, was seen in March, 1941, complaining of headaches and twitching of the eyes. She was given a routine refraction on March 31 and was relieved of symptoms with glasses. At this time a complete medical history would have elicited some interesting findings but none was taken. The patient returned in November, 1941, with headaches and a coincident acute sinusitis which confused the picture somewhat. She was slow to recover from the sinus infection and soon began to complain of extreme weakness. The history now brought out the fact this weakness had been coming on for over two years. Her facial expression was very dull; a partial ptosis of both lids was present; diplopia was present at times; it was impossible for her to wrinkle up her forehead and on so attempting a marked convergent squint developed. Visual fields were taken which showed a depression peripherally. This is not in accord with the usual findings of most authorities. Large doses of thiamin intramuscularly brought sudden, but not lasting improvement. The puzzle over the diagnosis began to clear up especially after the intramuscular therapy was changed to prostigmin. The patient was referred to a neurologist who confirmed the diagnosis of atypical myasthenia gravis. Prostigmin orally 15-30 mg. t.i.d. and 1 c.c. of 1:2000 prostigmin intramuscularly twice weekly enables the patient to continue with her normal activities. The unusual features are the convergent squint rather than the more common divergent type and the involvement of the peripheral fields.

Case 5.—This patient, white male, aged fifty, was refracted in November, 1941, and vision brought up to normal with glasses for both distance and near. He returned in December with a marked loss of vision and involvement of visual fields. He admitted on questioning to have a lighted pipe in his mouth eight hours a day and also stopped in for several drinks on the way home every night. His family physician found a mild diabetes along with the tobacco-alcohol amblyopia. The diabetes is under control, but in April, 1942, the vision was still 20/200 right and 20/50 left, showing that the toxic amblyopia will be slow to improve.

The preceding cases are all examples of optic nerve affections. Alcohol and tobacco as exogenous toxins go together as common causes of toxic amblyopia. There is no definite evidence as to the site of the lesion in this condition. About all that one can say is that tobacco in certain individuals seems to affect definite nerve elements since no other disease produces this type of field change, that is, the centrocaecal type of scotoma with depression for red and green. Since Amer-

ica has been drinking better liquor, alcohol amblyopia per se should become a rarity. Traquair² states that, apart from tobacco, pure alcohol amblyopia is almost unknown in England. It appears to be the fusel oil, acids, aldehydes and furfurals which contain the toxic factors. The incidence of the disease depends on the quality, not the amount, of alcohol consumed. Diabetes, according to the same authority, is not a particular cause of amblyopia, although there are present endogenous toxins which produce field changes. However, any illness may cause the development of amblyopia if enough tobacco is consumed.

Myasthenia gravis is interesting to oculists because of its predisposition to involving ocular and facial muscles, giving the diagnostic sad appearance, with ptosis, dysphagia and diplopia. No at-

tempt will be made to discuss the theories of its etiology and treatment. Only one authority mentions visual field changes in this disease and then only as "transient concentric constriction."

Summary and Conclusion

The purpose of this paper has been to stress the diagnostic importance of sudden visual changes and contraction of visual fields. In all these cases the pathological changes had no doubt been going on for some time, yet were undetected in a routine refraction.

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A WORD OF WARNING

When sulfadiazine was introduced to the medical profession, it was accepted with alacrity and enthusiasm. And small wonder, for early studies on the toxicity of the drug suggested that it had the desirable qualities of sulfapyridine and sulfathiazole but fewer toxic effects. There was less acetylation, the factor that made for urolithiasis, and hence it was a safer drug as far as renal excretion was concerned. This, together with its lesser gastrointestinal irritation, its less frequent and less marked cyanosis, and its fewer toxic effects on the bone marrow, led to a wider use of the drug. In some instances, lulled into a false sense of security, physicians may have given the drug indiscriminately and in doses excessive for conditions not warranting drastic treatment.

Reports of serious renal complications are now steadily accumulating.^{1,2,3,4} This was virtually predicted on the basis of animal experiments by two groups of

laboratory investigators^{5,6} who demonstrated the frequent occurrence in rats of urolithiasis following sulfadiazine therapy. Now we have pathologic evidence in the human that acetylated sulfadiazine crystals may accumulate in the renal tubules, with degeneration and necrosis of the tubules and surrounding tissue. A zone of inflammation, associated with hemorrhage, may surround the deposited crystals. Anuria and death, as a result of this, have been reported in several instances. It seems that while acetylation of sulfadiazine is of a lesser magnitude than that of the other sulfa drugs, it may have a more damaging effect on the renal tubules and the adjacent involved renal tissue.

Two lessons are to be learned from these reports and their pathologic findings. Sulfadiazine should be used only when genuinely indicated and for as short a period as possible. Not only the blood but the urine should be frequently examined, preferably daily. When microscopic hematuria appears, the drug should be continued only in cases of dire necessity. If urinary secretion is decreasing, fluids should be forced, intravenously if need be, and alkalis should be administered for greater solubility of the crystals. If ureteral obstruction has taken place, early catheterization of the ureter should be done. The best treatment is prevention—by judicious use of the drug, and careful, expectant observation for danger signals.—Editorial, *New York State Journal of Medicine*, September, 1942.

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²Bradford, H. A., and Shaffer, J. H.: Jour. A.M.A., 119: 316, (May 23) 1942.

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THE TUBERCULOSIS PROGRAM OF THE MINNESOTA STATE MEDICAL ASSOCIATION

At the first annual meeting of the Minnesota State Medical Association in February, 1870, the tuberculosis work was assigned to the Committee on Epidemics, Climatology, and Hygiene. It remained with this committee until June, 1894, when a special committee on tuberculosis was appointed. An excellent report was made in 1895, after which the committee was continued.

About 1925 a number of Minnesota physicians began an extensive educational campaign. Many who volunteered to assist traveled over the state for several years and spoke before all of the medical societies on one or more occasions. They participated in numerous special short courses on tuberculosis for physicians. Through an affiliation with the Minnesota Public Health Association they also spoke before large numbers of lay groups in schools, churches, et cetera. All of this was done for the purpose of acquainting the medical profession, as well as the public, with the modern viewpoint of tuberculosis control.

In 1931 the tuberculosis work of the State Medical Association was carried on as a part of the activities of the Public Health Education Committee and in 1934 a sub-committee on tuberculosis was appointed. In 1941 this became an independent scientific committee.

In 1939 a statewide campaign against tuberculosis was instituted by the State Medical Association. We are deeply indebted to Dr. Chester A. Stewart, who was then a Councilor, for precipitating action of the Council and providing splendid support for the Committee on Tuberculosis.

Several meetings of the Committee were devoted to the fundamentals of diagnosis, treatment, and prevention of tuberculosis, in order that the Committee might recommend the procedures which are standard and practical for the physicians of Minnesota. It is the opinion of the Committee that the medical profession of Minnesota has available all the information necessary and all the required facilities to control tuberculosis.

Fundamental and Standard Procedures in Tuberculosis Control

Diagnosis

The Tuberculin Test

Kinds of Tuberculin.—Old Tuberculin contains the various fractions of tubercle bacilli, such as the carbohydrates and protein. It is only the protein to which the human tissues become sensitized. Despite the claims of the opponents of tuberculin testing, Old Tuberculin contains no tubercle bacilli either alive or dead; therefore, there is no possibility whatsoever of tuberculosis being contracted from tuberculin. **Purified Protein Derivative**, as the name indicates, consists only of the protein of tubercle bacilli.

Submitted by the Committee on Tuberculosis of the Minnesota State Medical Association.

Where May Tuberculin Be Procured?—The Minnesota Department of Health and some local health departments are equipped to provide without charge to all physicians in the state Old Tuberculin in the proper dilution for immediate administration. Purified Protein Derivative may be obtained from drug houses.

Method of Administration.—Numerous methods of administering tuberculin have been devised, such as: (1) applying it directly to a superficial scarification of the skin, as recommended by Pirquet; (2) applying it directly to the skin without producing a scarification, as was originally recommended by Moro and Lautier, and more recently by Wolff under the name of the tape test, and Vollmer under the name of the patch test; (3) introducing tuberculin in proper dilution directly into the layers of the skin. This last method is known as the intracutaneous or intradermal test of Mantoux. *This has become the standard method because of the measured dosage, the accurate placing of tuberculin where it is desired, and the speed with which it can be administered.* The only objection to this method is the use of a needle and the injection of a substance into the skin. To give such an objection consideration is a paradox, since we must use the same procedure to determine the presence or absence of immunity to diphtheria and scarlet fever. Moreover, a hypodermic syringe must be used in producing artificial immunity in these diseases and in withdrawing blood for various tests.

Dosage.—The initial test dose of Old Tuberculin consists of 0.1 cubic centimeter of a dilution of one part of tuberculin to 999 parts of diluent. This amount contains 0.1 milligram of tuberculin. For those who do not react to this initial test a second dose is administered, consisting of 0.1 cubic centimeter of a dilution of one part of tuberculin to ninety-nine parts of diluent (these dilutions are prepared and delivered ready to administer by the State Department of Health). This amount contains one milligram of tuberculin. If no reaction occurs, one is safe in stating that living tubercle bacilli are not present in the body.

Time of Interpreting the Test.—The Committee strongly recommends that all tuberculin tests be interpreted seventy-two hours after administration, since changes in the appearance of the skin due to trauma, etc., have usually disappeared at that time and also delayed reactions to tuberculin may have appeared. A characteristic tuberculin reaction remains longer than seventy-two hours.

What Constitutes a Tuberculin Reaction?—An area of induration or edema of the skin five or more millimeters in diameter at the site of administration is necessary to classify the tested individual as a reactor. This may or may not be surrounded by an area of hyperemia. Small areas of redness or pinkness of the

TUBERCULOSIS PROGRAM

skin or shot-like nodules at the point of administration should never be interpreted as reactions to tuberculin.

Intensity of Tuberculin Reaction.—Generally speaking, the more recent the tuberculous infection, the higher the degree of sensitivity to tuberculin. So far as is known, there is no relationship between the intensity of reaction and extent of disease except in terminal cases. An individual with only microscopic lesions may have more sensitive tissues than one with gross areas of disease. Therefore, there is no advantage in grading tuberculin reactions into 1, 2, 3, and 4 plus; it suffices to determine only the presence or absence of the characteristic reaction.

How Often Should the Tuberculin Test Be Administered?—Until recently it was believed that the individual who becomes a reactor to tuberculin is always a reactor. However, it has been found that in the bodies of some persons all tubercle bacilli die and the tissues lose their sensitivity to tuberculin. It has not been determined how frequently this occurs or how long an interval is required. Because it is an established fact, however, the individual who reacts to tuberculin should be retested every three or four years. All persons who do not react to the usual second dose of tuberculin should be retested at least annually.

When Does the Tuberculin Test Fail?—After the primary tuberculosis complex begins to develop, it requires from three to seven weeks before the tissues become sufficiently sensitized to tuberculo-protein to react to tuberculin by the usual method of administration. In some persons all tubercle bacilli die but the sensitivity of the tissues apparently persists for a few weeks thereafter. When tuberculosis approaches the terminal stage, whether it is acute or chronic, the tissues apparently become somewhat desensitized and may not react to tuberculin except when a large dose is administered. Aside from these exceptions the tuberculin reaction is almost 100 per cent accurate in determining the presence or absence of tubercle bacilli in the human body.

Who Should Be Tested With Tuberculin?—The belief that only children should be tested with tuberculin is obsolete. Today there is no age level at which tuberculin testing is not of value. The test should be administered to all persons from infancy through senility. In the state of Minnesota the annual infection attack rate is 1 per cent or less; that is, among infants who have attained the age of one year, only one in 100 has been infected and, therefore, reacts to tuberculin. In some parts of the state the attack rate is less than one-half of 1 per cent each year. Therefore, since the span of life is in the neighborhood of sixty-four years it is obvious that with an annual attack rate of 1 per cent or less, far more persons become infected with tubercle bacilli for the first time in adult life than in childhood and many completely escape infection. Thus, the tuberculin test should be used among persons of all ages.

The Meaning of the Tuberculin Reaction.—When a characteristic tuberculin reaction is present, it means there are living tubercle bacilli in the body with the above exceptions. Since it is only tubercle bacilli that cause tuberculosis, it is significant to know when these organisms are present. They may already have produced clinical disease or if not they may cause it to develop at any subsequent time. Therefore, the test serves to screen out those persons from any group who already have or are potential cases of clinical tuberculosis. With the above exceptions, the absence of a tuberculin reaction is excellent evidence that living tubercle bacilli are not present in the body.

Practical Significance of the Tuberculin Test.—The tuberculin reaction provides the physician with two extremely important and practical facts. 1. It promptly determines that the reactor has been in contact either directly or indirectly with a contagious case of tuberculosis. (Infection from animals, particularly cattle, has become a rarity in Minnesota.) Often such cases are unsuspected, since the responsible individual is not ill: therefore, the examination of adult contacts frequently brings to light persons with contagious tuberculous lesions who have good working capacities, as well as those who believe they have only such conditions as asthma and bronchitis. Obviously, the more recent the infection, the greater the likelihood of finding the contagious case among the adult associates. (Children disseminate tubercle bacilli to others with great rarity.) For example, when a child between birth and six or seven years of age is found to react, the physician who searches for the source of the infection often finds it in a member of the immediate household; the younger the child, the greater the likelihood of finding the contagious case. Likewise, when older children and adults are tested periodically and an individual who was a non-reactor a year ago is found to react today, it is obvious that some adult contact during that year had contagious tuberculosis and careful investigation often discloses the spreader of tubercle bacilli. Thus, the tuberculin test is our most valuable epidemiological agent.

2. Since the tuberculin reaction determines the presence of living tubercle bacilli in the individual's body, it indicates an immediate adequate examination of the reactor for clinical tuberculosis, not only in the lungs but in all parts of the body in which this disease is frequently found. If clinical disease is not located the reactor should be examined in a similar manner at least annually.

X-Ray

The roentgen-ray is of great value in detecting areas of disease in certain parts of the lungs, after they have become macroscopic in size and before they are sufficiently large to cause symptoms. However, no phase of x-ray inspection is a substitute for the tuberculin test, in any sense of the word. Nevertheless, every tuberculin reactor should have periodic x-ray inspection of the chest. Chronic tuberculous lesions in the lungs often cast x-ray shadows two or three years before significant symptoms appear.

TUBERCULOSIS PROGRAM

Methods of Using the Roentgen-Ray.—Fluoroscopy is valuable, particularly in inspecting the chests of small or thin individuals. It permits one to visualize nearly all of the lung when the chest is properly rotated and, thus, shadows may be seen which are obscured from view on x-ray films by the heart, diaphragm, and other structures. Many physicians are not able to take the necessary time to accommodate the eyes for fluoroscopic inspection of the chest and, thus, much is overlooked which might otherwise be visualized. Fluoroscopic inspection is not as satisfactory as the x-ray film for detail; moreover, no record of shadow is made which may be compared with subsequent inspections. Therefore, it is recommended that x-ray film be used whenever possible but in the absence of adequate facilities the fluoroscope may be used to great advantage.

Photofluorograms made by photographing the images from the fluorescent screen are now being made on 35 millimeter and 4x5-inch film. The cost of these films is small but the necessary equipment for exposing them is expensive. The Committee does not feel that these films have yet been demonstrated to be of sufficient value to take the place of the 14x17-inch film.

X-Ray Film.—Standard size, 14x17-inch x-ray film, either celluloid or paper, should be used whenever possible to inspect the chests of tuberculin reactors. Several members of the Committee have had extensive experience with both celluloid and paper film and have found them equally good in detecting shadows of disease. Therefore, the choice of film is left entirely to the physician's judgment. However, no film should be made except with standard technique, so well executed that the usual normal lung markings are clearly visible on the finished product. These films should be preserved not for five years but indefinitely, regardless of whether they show any evidence of disease, in order that they may be compared with films made subsequently. The tuberculin reactors whose x-ray films reveal no evidence of disease in the lung on the first inspection may at any subsequent time develop one or more pulmonary lesions.

Unfortunately, the x-ray film of the chest possesses certain disadvantages in the detection of tuberculosis: 1. There are several pulmonary diseases which cast identical shadows; therefore, etiological diagnosis from x-ray shadows cannot be made with a high degree of accuracy. 2. Only 75 per cent of the lungs is visualized on the usual single x-ray film of the chest; the remainder is obscured from view by shadows of other structures, particularly the heart and diaphragm. 3. Extrapulmonary clinical tuberculosis is not uncommon in persons whose lungs appear clear on x-ray film inspection.

Who Should Have X-ray Film Inspection of the Chest?—Chronic pulmonary tuberculosis is such a rarity in children from birth to high school age that there is almost nothing to be gained by inspecting with x-ray the chests of even the reactors to tuberculin. However, with the beginning of the period of adolescence, x-ray

film inspection should be made periodically of the chest of every reactor. There is no age level at which this work should be stopped, as long as the individual reacts to tuberculin. Persons whose lungs have been clear throughout the earlier decades may, and often do, develop chronic, pulmonary tuberculosis in the later decades of adult life. Whether or not a physician limits his work to x-ray, he should describe shadows and list the possible etiological factors but never attempt a final diagnosis from the film alone.

Clinical and Laboratory Examinations

The tuberculin test screens out those persons who have living tubercle bacilli in their bodies. The x-ray film inspection of the chest serves only to screen out those persons who have macroscopic lesions in the visualized part of the lungs, which may be tuberculous. Therefore, persons with such lesions should be carefully examined to determine etiology. Many individuals with lung lesions are entirely free from symptoms and abnormal physical signs. If sputum is present, it should be carefully examined for the various organisms which may be responsible for the lesion, particularly acid-fast bacilli. If no sputum is available, gastric lavage is helpful. This is done by administering by mouth 200 c.c. of water before breakfast. A few minutes later the gastric contents are removed, centrifuged, and the sediment examined for acid-fast organisms. A guinea pig should also be inoculated with some of the sediment. This aids in determining whether the acid-fast organisms seen through the microscope are pathogenic. It may also reveal the presence of tubercle bacilli even though they have not been detected by direct microscopic inspection. If tubercle bacilli are not recovered in this manner, one may need to resort to periodic inspection of the shadow on x-ray films. If a shadow is cast by an acute lesion, such as pneumonia, it usually disappears within a month; if it persists longer than four or five weeks it is probably due to one of the more chronic diseases, such as those caused by fungi or tubercle bacilli, and may even be malignant. Bronchoscopic inspection and the procurement of material for biopsy may be necessary. When malignancy is suspected this should be done at the earliest possible moment.

Management of Tuberculous Patients

Tuberculosis begins in the human body when tubercle bacilli are first ingested by neutrophils and are focalized at certain points where tubercle formation occurs. It may never develop beyond the lesions of the primary complexes. On the other hand, it may at any time develop to proportions resulting in illness and death. This terminal event may follow a long succession of remissions and exacerbations extending over many years or several decades.

One of our chief difficulties has been that we have not recognized the presence of tuberculosis until it produced symptoms to the point of causing incapacity. Thus, we have used the word "tuberculosis" synonymously with "consumption." It is only when we recognize tuberculosis as a disease from its very beginning,

TUBERCULOSIS PROGRAM

when its presence is manifested only by the tuberculin test, that we will be in a position to properly manage the disease in a given individual or among the persons of a community. Therefore, the management of tuberculosis in a community or a county consists, first, of determining which persons react to tuberculin at a given time, as well as those who subsequently become reactors. No matter how clear the films of the chests of these persons appear or how well they are, some of them will later develop clinical lesions in the lungs or elsewhere; therefore, the proper management of the group with no manifestations of tuberculosis except the tuberculin reaction consists of keeping them under close observation; that is, making examinations at least annually for the presence of clinical lesions. When such lesions appear in the lungs they can usually be detected long before they cause illness or eliminate tubercle bacilli through the sputum. At this time they can usually be controlled and prevented from causing illness or becoming contagious to others. Moreover, this can be done with little inconvenience or loss of time to the patient.

Among tuberculin reactors a group will usually be found who on the first examination have tuberculous lesions in the pre-symptom and pre-contagious stage. They can be treated in the same manner.

Another group will be found that already has disease so extensive that the lesions are eliminating tubercle bacilli and some symptoms are present. Such persons should be isolated at the earliest possible moment, preferably in institutions. The sanatoriums in the state of Minnesota were built primarily for isolating contagious cases of tuberculosis and, secondarily, for saving as many lives as possible. To date such a high percentage of patients admitted have had tuberculosis so advanced that the majority could not be fully restored to health. Nevertheless, without the sanatoriums of Minnesota the present encouraging situation could not have been possible.

Only a few years ago most of our sanatoriums had long lists of patients desiring admission; today several of them have vacant beds. Therefore, those persons who are found to have contagious tuberculosis can promptly be removed from their communities and isolated in institutions as long as their disease is contagious.

The physician in private practice, therefore, has a large role to play in the management of tuberculosis in his community even among those who must be sent to sanatoriums. He sees them during the pre-sanatorium period and must take care of those who return from the institution. Thus, the local physicians of a county are in a position to control tuberculosis by preventing persons with contagious disease from spreading tubercle bacilli to others and preventing most tuberculin reactors from developing contagious disease.

Physicians Should Assume Leadership in Local Health Problems

The Committee believes that the local medical profession should be active in the control of tuberculosis in each county. The diagnostic, therapeutic, and preventive work has been so standardized that it can be

carried on by all physicians who are willing to become interested and to devote a reasonable amount of time to it in their offices and their communities. Survey methods, conducted in coöperation with the local medical profession, to discover tuberculosis, are usually of value in finding cases and for public education. When adequate x-ray equipment and laboratory facilities do not exist in the local offices of physicians or the hospitals, it may be practical to introduce x-ray devices, etc., when the same is approved by the local medical profession. It is only in this manner that tuberculosis work can be adequately conducted and perpetuated to the point of bringing the disease to the irreducible minimum in the shortest possible time. The state of Minnesota now possesses adequate facilities for isolating contagious cases of tuberculosis; indeed, we have many vacant beds in our sanatoriums. The physicians in private practice are qualified to treat the non-contagious cases. Thus, the medical profession has at hand every necessary facility to control tuberculosis.

Control of Tuberculosis on the County Area Plan

To try to develop a tuberculosis control program on a state-wide basis at once did not seem feasible. Therefore, the Committee decided the problem would be simplified by working on the county area plan. It was thought best to select a demonstration county from which the work could extend to others. Several counties were considered with reference to such factors as population, financial rating, physicians, nurses, welfare workers, tax delinquencies, tuberculosis mortality, and previous tuberculosis work accomplished, as well as present interest manifested. On August 1, 1940, Meeker County was the unanimous choice of the Committee. On August 19, representatives of the Committee met with the physicians practicing in Meeker County, who without exception approved the plan and expressed a desire to control tuberculosis at the earliest possible moment. Following that date until September, 1941, nearly all regular meetings of the Tuberculosis Committee were held at Litchfield, with the physicians practicing in Meeker County. Considerable time was spent in the discussion of the program and the actual procedure. As far as we know, this is the first time that a county medical group has sponsored a complete tuberculosis control program and we have been unable to find anywhere the record of a finer spirit of coöperation among physicians than that manifested by the Meeker County group.

The Meeker County Program

1. It was decided that the first step in the program should be the administration of the tuberculin test to persons of all ages among the total population of approximately 20,000. This would immediately divide the population into two groups: (a) Those who do not have tubercle bacilli in their bodies. These persons, together with those who move into the county and those subsequently born, to be tested annually as long as they do not react. (b) Those who have already developed the primary tuberculosis complex and, thus, have previously been exposed to contagious cases of tuberculosis.

2. All persons found to react to tuberculin on the

TUBERCULOSIS PROGRAM

first test or subsequently should have x-ray film inspections of their chests in order to determine which of the reactors have macroscopic lesions in the lungs that might be due to tuberculosis. For this purpose the physicians of Meeker County decided to use the paper film because it has been found to be as satisfactory as celluloid film and also because of its lower cost.

3. All persons found to have lesions as manifested by shadows on the x-ray film to be completely examined to determine the etiology of their disease and those who prove to have clinical tuberculosis in a contagious form to be isolated at once. Those with disease in the pre-contagious stage to be treated either by the local physicians or sent to a sanatorium as indicated.

The Minnesota State Department of Health, through its Executive Secretary, A. J. Chesley, M.D., and its Director of Public Health Nursing, Miss Olivia Peterson, have aided and directed the County Public Health Nurse and School Nurse in this program. An intensive educational program was conducted throughout Meeker County by the Minnesota Public Health Association, the Meeker County Public Health Association, and numerous local organizations. The newspapers of the county have played an important role in bringing to the attention of the citizens everywhere the importance of controlling tuberculosis. It was arranged to have most of the tuberculin testing done in the offices of physicians and in schools when the physicians chose to go there for this work. Adequate x-ray equipment was found to be available in four offices and in the Litchfield Hospital. All x-ray work was scheduled for these five places. The local physicians are well qualified in x-ray interpretation, as well as all phases of the complete examination necessary to determine the etiology of disease which casts shadow on the x-ray film. Therefore, the medical profession of this county unit is self-sufficient from the standpoint of diagnosing tuberculosis in all of its phases of development. This also applies to the treatment and prevention of the disease.

The actual work began in May, 1941. The physicians arranged to send a special message to the head of each household in an entire township. This message contained information concerning the program and also an invitation to report to the physician or hospital of the family's choice for the tuberculin test. Following this the work has been extended from township to township.

On May 1, 1942, the Meeker County physicians reported that approximately 5,412 persons had been tested with tuberculin and 22 per cent reacted. Among the reactors, ten were found to have clinical pulmonary tuberculosis. In addition to actually finding the persons with chronic pulmonary tuberculosis a large amount of interest has been created among the citizens which we believe will result in numerous periodic examinations, after the demonstration is completed. While the physicians are doing all the work of the demonstration with no remuneration whatsoever, as only materials and costs are being provided, no one could expect that this would be continued beyond the period of the demonstration. However, we feel that the demand for examinations for tuberculosis will be so

increased as to result in good for all in future years.

The physicians practicing in Meeker County are establishing standards by actual practice and the work has proceeded to such a point that we believe medical societies of other counties will soon begin a similar tuberculosis control program. Indeed, the physicians in some counties have already made inquiry and expressed a strong desire to proceed at the earliest possible time.

Recognition or Accreditation of Counties

On September 25, 1941, the Committee discussed the advisability of setting up certain minimum standards in tuberculosis control which might serve as a basis for special recognition or accreditation of counties which qualified. Dr. A. J. Chesley, executive secretary of the Minnesota Department of Health, provided a list of the eighty-seven counties, together with the mortality rate from tuberculosis over the past five years. After studying these mortality rates, the Committee members were of the opinion that one standard for special recognition might be an average mortality rate of ten or less over the past five years. It was found that four counties, namely, Lincoln, Murray, Olmsted and Stevens, already had this low mortality rate. The Committee was of the opinion that incidence of tuberculous infection among seniors in high schools of the county might serve as a second standard for special recognition. At the September and October meetings these standards were discussed and it was decided that a county would be considered as qualifying for recognition if the annual average mortality rate over the past five years was ten or less per 100,000 and a recent testing of at least 80 per cent of all high school students in the senior classes revealed not more than 15 per cent infected.

A county outline map of the State of Minnesota was prepared on which the average mortality rate for the past five years is indicated by various degrees of shading. The lighter the county appears the lower the tuberculosis mortality rate (Fig. 1). There are several counties in Minnesota with the mortality rate between ten and fifteen per 100,000, which might soon qualify for accreditation if the seniors in their high schools meet the infection incidence requirement. In some counties the mortality rate is still high. This is especially true where there is a considerable Indian population with high mortality rates. For example, in one county it is said that about 3 per cent of the population is Indian and that this 3 per cent provides about 50 per cent of the entire tuberculosis mortality. Although splendid work is being done to control tuberculosis among the Indians, it is obvious that considerable time will be required to reduce the mortality rate and the infection incidence to the present standards. Therefore, it has been suggested that in such counties some special provision should be made whereby the mortality rate and infection incidence can be recorded separately for Caucasians and Indians or that special recognition be given for achievement in tuberculosis control among the Indians.

In St. Louis, Ramsey and Hennepin counties the mortality rate is still well above the minimum standard requirement for accreditation and because of the large

TUBERCULOSIS PROGRAM

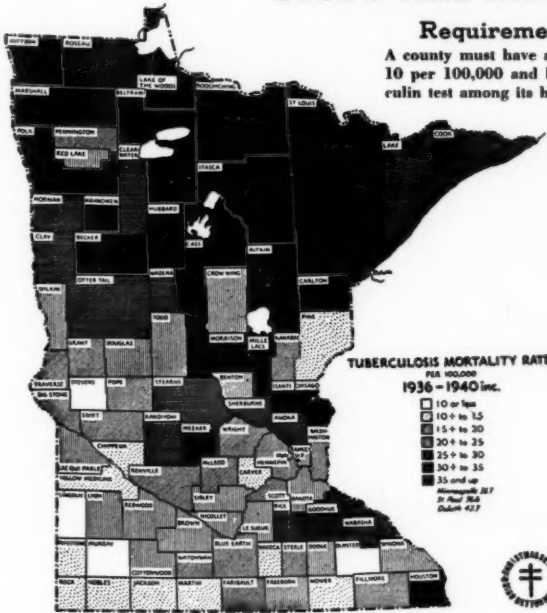
population in these counties it is possible that somewhat lower standards may be necessary for a few years. The proposed plan of accrediting counties was submitted to the Council of the Minnesota State Medical As-

sociation and the Committee on Tuberculosis and the Department of Health prepare the certificate."

The subject was presented before the regular meeting of the Minnesota Department of Health on October 28,

Where Does Your County Stand?

STUDY THIS MAP!



Requirements for Accreditation
A county must have a tuberculosis death rate of less than 10 per 100,000 and less than 15% reactors to the tuberculin test among its high school seniors.

DEATH RATE OF 20 PLUS TO 25

Rank	County	Average Rate Per 100,000 1936-1940
31	Grant	20.5
32	Pope	20.8
33	Fillmore	21.9
33	Traverse	21.9
34	Faribault	22.1
35	Swift	22.2
36	Pennington	22.5
37	Blue Earth	22.9
37	Renville	22.9
38	Big Stone	23.2
39	Kanabec	23.3
40	McLeod	23.6
40	Steele	23.6
41	Washington	23.8
42	Wright	24.0
43	Hennepin	24.8
44	Scott	24.9
44	Watsonwan	24.9

DEATH RATE OF 25 PLUS TO 30

45	Wadena	25.8
46	Anoka	25.9
47	Wabasha	26.1
48	Kandiyohi	26.2
49	Clay	27.3
50	Norman	27.4
51	Otter Tail	27.7
52	Stearns	28.4
53	Lake	28.7
54	Sherburne	29.1
55	Goodhue	29.2
56	Clearwater	29.5
57	Rice	29.6

DEATH RATE OF 30 PLUS TO 35

58	Roseau	30.1
59	Chicago	31.9
60	Morrison	32.5
61	Houston	32.9
62	Hubbard	33.4
63	Isanti	34.4
63	Cook	34.4
64	Aitkin	34.7

DEATH RATE OF 35 PLUS AND UP

65	Carlton	36.4
66	Koochiching	36.7
67	Meeker	36.8
68	Polk	36.9
69	Kittson	38.1
70	Itasca	38.9
71	Lake of Woods	39.2
72	Miller	40.6
73	Marshall	45.3
74	St. Louis	46.2
75	Becker	46.6
76	Mahnomen	46.9
77	Beltrami	67.9
78	Cass	68.2

Minnesota Tuberculosis Death Rate by County 1936-1940 Inclusive

DEATH RATE OF 10 OR LESS

Rank	County	Average Rate Per 100,000 1936-1940
1	Lincoln	5.5*
2	Olmsted	8.7*
3	Stevens	9.2
4	Murray	9.4

DEATH RATE OF 10 PLUS TO 15

5	Carver	10.3
6	Martin	10.7
7	Pine	11.3
8	Chippewa	11.9
9	Jackson	12.0
10	Nobles	12.6
11	Rock	12.8
12	Pipestone	13.4
13	Mower	13.9
14	Yellow Medicine	14.2
15	Waseca	14.6

DEATH RATE OF 15 PLUS TO 20

Rank	County	Average Rate Per 100,000 1936-1940
16	Cottonwood	15.1
17	Lac Qui Parle	15.5
17	Wilkin	15.5
18	Dodge	15.7
19	Ramsey	16.4
20	Sibley	16.9
21	Brown	17.5
22	Benton	17.6
23	Douglas	17.9
23	Le Sueur	17.9
24	Nicollet	18.9
25	Dakota	19.1
26	Red Lake	19.2
27	Winona	19.3
28	Crow Wing	19.8
29	Lyon	19.9
29	Todd	19.9
29	Freeborn	19.9
30	Redwood	20.0

Fig. 1.

sociation on October 12, 1941, when the following action was taken:

"The matter of issuing a certificate or some means of recognition to the four counties in Minnesota eligible for accreditation was discussed. It was moved, seconded, and carried that the State Department of Health and the State Medical Association, subject to the approval of the Department of Health, issue a certificate

1941, and the plan was approved. This body voted to appoint a committee from its membership to work with the Tuberculosis Committee of the State Medical Association. The president, Dr. Erling Platou, appointed Drs. Ruth E. Boynton and A. G. Shulze to membership on this Committee. Members of the Tuberculosis Committee had already drawn up some proposed recognition certificate forms. These were presented to the

TUBERCULOSIS PROGRAM

Minnesota Department of Health Committee, who selected the one they considered most appropriate. This was then submitted to Dr. Chesley, to all members of the Council, and to members of the Committee on

county in the United States to be accredited with reference to tuberculosis control in man. Olmsted County was accredited on May 22, 1942, Murray County on August 28, 1942, and in October, 1942, Stevens County



Fig. 2.

Tuberculosis of the State Medical Association for any suggested change.

Accreditation of Counties

Since Lincoln had the lowest mortality rate of any county in the state (5.5) for the past five years and since within approximately two weeks after special recognition was suggested the physicians of that county tested the high school senior students and found the incidence of infection to be only 7.4 per cent, the Committee decided to recommend to the Council and the Minnesota Department of Health that they jointly certify or accredit this county as the first one to attain the minimum standards. It was then decided that this event should be celebrated at Tyler, in Lincoln County, on December 11, 1941, when the certificate (Fig. 2) was presented. As far as we know this is the first

is scheduled to be accredited. Accreditation of counties has already resulted in widespread activities in tuberculosis control.

COMMITTEE ON TUBERCULOSIS, Minnesota State Medical Association.

R. N. BARR, M.D.	G. A. HEDBERG, M.D.
L. V. BERGHS, M.D.	A. J. HENDERSON, M.D.
H. A. BURNS, M.D.	R. R. HENDRICKSON, M.D.
S. S. COHEN, M.D.	W. S. HITCHINGS, M.D.
K. A. DANIELSON, M.D.	E. A. MEYERDING, M.D.
C. F. EWING, M.D.	K. H. PFUETZE, M.D.
W. H. FELDMAN, M.D.	C. L. SCOFIELD, M.D.
L. H. FLANCHER, M.D.	S. A. SLATER, M.D.
E. K. GEER, M.D.	B. B. SOUSTER, M.D.
J. A. MYERS, M.D., <i>Chairman</i>	

RELIEF FROM ASTHMA

"Beneficial results" and relief of asthmatic paroxysms in nearly three-fourths of a group of asthma patients were obtained by x-ray treatments, Dr. Ira I. Kaplan and Dr. Sidney Rubinfeld, of New York, reported.

The longer and more severe the illness, the more favorable was the response, the doctors stated. Often the symptoms got worse following treatment before they got better.

The patients were mostly men between thirty and fifty years who were allergic to various proteins but who were not helped by desensitization treatment. The x-ray treatment was given two to three times a week over the chest, occasionally over other parts of the body.—*Science News Letter*, September 26, 1942.

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

A. J. Hertzog, M.D., and S. V. Lofness, M.D.
Pathologists

Presentation of a Case

DR. M. TENEN: This case is that of an eighty-three-year-old white female who was admitted to the surgical service on June 26, 1942. She had recently fallen and suffered a fracture of the neck of the left femur. Her previous history is most significant. At the age of sixteen years, a small growth about the size of a pea was noticed on the right side of her face in front of the ear. It caused no symptoms but slowly enlarged, reaching the size of a chicken egg at the age of forty years, when it was excised. The tumor has since been removed six times at various hospitals but always recurred. In 1923, the tumor was diagnosed in a Minneapolis hospital as adenocarcinoma. In 1933, following removal of the tumor at the University hospital, the diagnosis was squamous cell carcinoma. However, following a discussion between the surgeons and pathologists, the diagnosis was changed to mixed tumor of the parotid. In 1936, radon seeds were implanted. The tumor gradually grew larger and during the last four years infiltrated the whole right side of her face and extended 6 cm. below the lower border of the mandible. She became blind and deaf on the right side during the last two years of her life. The fracture of the neck of the femur was treated by spica. However, the tumor of her face prevented her from eating and her weight dropped to 80 pounds. She became weaker and expired on August 29, 1942.

DR. GRATZKE: Radiographs made on August 25, 1942, show a complete destruction of the right mandible and erosion into the basilar portion of the skull, maxilla, and orbit. The malar bone and zygomatic process are also destroyed. The areas of decreased density in the tumor suggest adipose tissue, while the areas of increased density resemble bone and fibrous tissue. Old radon seeds are seen in the upper portion of the tumor in the region of the parotid gland. The tumor is quite invasive and suggests a myxosarcoma.

DR. HERTZOG: This is an unusual history for a malignant tumor. The tumor was first noticed at the age of sixteen years and she died at the age of eighty-three years, a total duration of sixty-seven years. I would like to ask what was the immediate cause of death?

DR. TENEN: She died of starvation because the tumor prevented her from eating.

Autopsy Findings

DR. TENEN: Autopsy revealed an emaciated elderly female weighing only 80 pounds. The right lung weighed 840 grams and the left lung 320 grams. The right lung showed bronchopneumonia and the right pul-

monary artery was occluded by a large antemortem blood clot. The source of the pulmonary embolus was not found. The other anatomical findings of interest were limited to the face. There was a tumor that extended from the right orbital region to about 6 cm. below the inferior border of the right mandible. The right mandible was infiltrated and destroyed by the tumor. The tumor also infiltrated inward and involved the entire inner surface of the cheek and extended posteriorly to the pharynx. It also extended up behind the right eyeball, pushing the bulb forward with a resulting exophthalmus on that side. The tumor had infiltrated the floor of the middle cerebral fossa, pushing up the temporal lobe but not infiltrating the brain. The defect in the skull measured 3 cm. in diameter. Photographs of the specimen are shown.

DR. LOFNESS: We have several slides from the tumor taken at autopsy. These at the periphery show evidence of rapid growth and are composed largely of solid masses of epithelium and small irregular glands. Other sections show a myxomatous stroma between the islands of epithelium. There are no areas of cartilage. The other slide is one of a bronchial lymph node. It was sectioned because it was thought that it might represent metastasis. However, it shows only chronic inflammation and a large amount of carbon pigment. Although she had this large tumor for sixty-seven years, the autopsy showed no evidence of any metastases.

DR. HERTZOG: I think the slides show the cause of the discrepancy in the earlier histological diagnoses. If a section was taken through the solid areas it could be called an adenocarcinoma. It is only when the myxomatous stroma of the tumor is seen that we recognize that we are dealing with a mixed tumor. It is generally believed that the tumors of this type that show a preponderance of epithelium are more apt to recur. This is the usual history of a mixed tumor of the parotid; namely, frequent recurrences with a tendency to invade surrounding structures, but not to metastasize. True carcinomas occasionally occur in the salivary glands, but these are rare and characterized by rapid growth and metastases.

DR. TENEN: One of the most complete studies of mixed tumors of the salivary glands was that reported by McFarland (Surg., Gynec. and Obst., 63:457:1936) in a follow-up study of a large series of cases. In 301 cases, he found 278 occurring in the parotid, twenty-two in the submaxillary gland and one in the sublingual gland. The largest tumor found when left undisturbed weighed 26 pounds. Recurrences were noted as long as forty-seven years after removal. One case had seventeen recurrences in twenty-three years. McFarland came to the surprising conclusion that the smaller the tumor, the more likely it was to recur. Hence, he recommended waiting until the tumor approached the size of a lemon before it was removed. He called this letting the tumor become ripe.

(Continued on Page 819)

HISTORY OF MEDICINE IN MINNESOTA

PIONEER PHYSICIANS OF MARTIN COUNTY PRIOR TO 1900

By ROSCOE C. HUNT, M.D.

Fairmont, Minnesota

THE early history of Martin County is similar to that of other western settlements. Homesteads along the Blue Earth River had been taken, and venturing from there a few hard settlers crossed the prairie westward and took permanent claims along the wooded banks of the lakes in Martin County. A settlement was made at the Center Chain Lakes, in the southern part of the county, then called Chanyaska. Another was on the lakes where Fairmont now lies. In 1857 Elisha Banks Hall established his home in the timber on the east bank of the beautiful lake which bears his name. William Budd soon afterward settled on the shore of the adjoining lake north which in turn bears his name.

Although the details of medical practice in Martin County prior to and through Civil War days are extremely vague and indefinite, there are records of certain physicians having lived here. It is known that some carried the title of "doctor" who had little or no medical education, but who, as adventurous spirits, gave what medical services they could to those who had no better care.

Although definite dates are hard to find, many things are known about the lives of these early physicians.¹ There were a few who are remembered mainly because of their bad habits, but most have left behind them records of great services rendered to the community under the most trying conditions. As one reads the meager accounts of their activities and hears by word of mouth of their characters, one is impressed greatly by the devotion, skill, honesty, and physical endurance of these pioneers. A man's ability must be measured by what he is able to do under the conditions in which he works. With this as a standard, who can say that these men were in any degree inferior to their confreres who practiced in settled communities where every facility for scientific practice existed?

Among the earliest settlers there came to Center Chain a **Dr. Shafer**,^{1,2} in 1858. He staked a claim on a strip of land between North and South Silver Lakes, just above the Iowa Line and adjoining Iowa Lake on the south. Here he had his homestead and built a log cabin which still is preserved (1942) on the original site. There is little known about him except that for several years he was the only physician west of the Blue Earth River and that he practiced for at least ten years. That he probably was not a skillful physician is indicated by the record that on one occasion when a number of persons had frozen their hands and feet in a blizzard it was necessary to call a physician from Blue Earth to perform the amputations. The last note available on Dr. Shafer is a paragraph in the *Martin County Sentinel* of March 19, 1875, in which it was stated that Dr. Shafer was seriously ill at his home in Center Chain.

Dr. McDuff¹ lived in Tenhassen, at least from 1862 to 1865. Both of these dates are of record, the latter being the year of his appointment as "country doctor to the poor" by the county commissioners.

Dr. Denton is shown by the records to have been appointed county physician in 1865. There seems to be no other record of him available.

HISTORY OF MEDICINE IN MINNESOTA

Dr. Orville Paterson Chubb^{1,2,3,4,15} was the first practitioner of known medical ability to establish residence in the community. He was born in Wayne County, Michigan, in 1830. He was graduated from Wesleyan College at Leone, Michigan, near Ann Arbor, and subsequently was graduated from a medical school in Cincinnati, possibly Cincinnati University. Throughout the Civil War he served as a captain in the Medical Corps of the 5th Michigan Regiment.

In the spring of 1865, with General Cutcheon, Colonel Lonsberry and other officers of the Regiment, he came to Martin County to take up land under the Soldiers' Filing Law. After filing claims these men returned to their army service, which was soon to be terminated. In the fall of 1865 Dr. Chubb and Colonel Lonsberry returned to Martin County, driving a flock of sheep overland.

At various times during his stay in the county Dr. Chubb owned considerable property. He was a man of ability in many lines. As a surveyor he laid out the townsite of Fairmont, platted the first cemetery and also the first fair grounds, and located a great many claims for settlers. He constructed bridges across creeks and rivers in the county. At various places he examined clay and by Buffalo Lake, north of Fairmont, he found some that was suitable for making brick. Here he built a kiln, and the brick he made were used for several buildings. One of these structures, which still stands (1942) he built for his home, and in it he ran a hotel for several years. He stocked and managed the first drug store in Fairmont. He built one of the first sawmills in the county on the creek north of Wilmont Lake, and with another early settler, Alpha D. Cadwell, operated a grist mill where flour first was made in the county. The site of the mill was on Center Creek at the outlet of George Lake. Both mills ran by waterpower. For some time Dr. Chubb published a newspaper. He was a charter member of the Chain Lakes Masonic Lodge.

Dr. Chubb was a very gentle and quiet man. His experience in the Civil War, with its attendant suffering and death, sickened him of contact with illness and pain, and he did not intend to continue medical practice on his return to civil life. However, as there was no other physician in the community, he willingly and skillfully gave medical service to all who asked it, until Dr. David Winslow Hunt arrived, in 1871. He then discontinued practice and never resumed it.

In 1873 the community became too well settled to suit Dr. Chubb and his restlessness took him onto the frontiers of Kansas, Nebraska and other western states. Finally he reached California, where he lived many years. His death occurred in Michigan in 1894. The body was brought to Fairmont, where it rests in Lakeside Cemetery.

David Winslow Hunt^{1,3,7,13,17} was the first physician permanently to locate in Fairmont for the practice of medicine. He was born in 1845 in Mason, New Hampshire, and was the older of two sons, both physicians, of Dr. Nehemiah A. Hunt, a "circuit riding" physician of Blue Earth and Faribault Counties in the early sixties. He entered the Union Army in 1862 at the age of seventeen years and served until near the end of the war. He spent some time in a Confederate prison. During his service he received some slight wounds and in the spring of 1865, after long confinement in a hospital, he was discharged and returned to his home. Although after many months he regained his health, some disabilities, the result of his injuries, followed him throughout his life. After his return to active pursuits he resumed his education, taught school in Vernon Center in 1868 and 1869, and was graduated from the Medical School of the University of Michigan, at Ann Arbor, in 1871. This same year he established his residence in Fairmont, where he practiced thirteen years.

HISTORY OF MEDICINE IN MINNESOTA

Dr. Hunt was a mild-mannered, likeable man of good medical ability. He did not affect the beard that most physicians wore in those days but had a long, thick mustache. It is probable that he performed the first surgical operations of any importance in the county. In the year 1874, he performed a "cutting" operation for the cure of hernia on a settler, John Rooney,⁸ who lived on a claim near St. James; the procedure was carried out in the patient's log cabin. There is a record of an amputation of both feet which was performed under comparable conditions, in a basement under a log cabin.

The *Martin County Sentinel*² in 1875 stated: "Dr. Hunt went to Saint Paul to attend a State Medical Society. He will be gone about a week and in the meantime people had better refrain from getting sick." He was the only physician in the community at that time. The *Sentinel* later stated that Dr. Hunt owned and operated a drug store.

In the issue of the *Sentinel*² for January 1, 1875, there appeared the following item:

"A runaway. Dr. Hunt's spirited team got the start of him last Sunday night while he was returning from visiting patients and indulged in a runaway which would have done credit to a much larger town than Fairmont. Our reporter was unable to follow the team in all its ramsidulations but we learned that the doctor was thrown from the buggy—the buggy broken in many pieces—one of the horses seriously injured and the buggy badly mutilated."

In 1882 Dr. Hunt found that he was unable to stand the rigors of the climate, turned his practice over to his brother, Dr. F. N. Hunt, and moved to California. He practiced in Anaheim, Redlands, and then for many years in Glendale. During these years he invested all of his income in various speculations: orange orchards, walnut groves, oil wells, and so forth, and he always lost. Some of the land he owned on Signal Hill, Long Beach, later made millionaires of a good many people.

Dr. Hunt died⁹ in 1922 at the Soldiers' Home in Sawtell.

Dr. Ammi Lander Bixby^{3,4,5,14,16} was born April 21, 1856, on the farm his father had taken as a homestead on the east shore of Iowa Lake a few miles south of the Minnesota line. He spent his boyhood there and attended country school. His early training as a physician was obtained by study with a physician at Estherville, Iowa, and soon afterward, about 1878, he started practice at Sherburn, or as he used to say, "hung out his shingle." He was the first physician in Sherburn, a small frontier town where money was scarce. In 1878, he married a girl from his home neighborhood to whom he always lovingly referred as "Mollie."

In 1879, Dr. Bixby moved to North Platte, Nebraska, where he practiced medicine for two years. After a short interval spent in newspaper work at Swan Lake, Iowa, he attended Rush Medical College; he did not finish the course, but left to return to the newspaper field. He worked in various newspaper offices and became a writer of human-interest stories, mostly in poetical style. For many years, from August 24, 1892, to December 24, 1934, the day of his death, he wrote the column "Driftwood" in the *Nebraska State Journal*.

His writings alternated between pathos and humor. He was much sought after as a speaker and gave many lectures throughout the West. His humor was chiefly droll, his talks and writings interspersed with stories and sketches of human interest.

For many years Dr. Bixby made an annual trip to Martin County in order to

HISTORY OF MEDICINE IN MINNESOTA

attend the meeting of the historical society. At such meetings he was at his best. He used to refer to his "medical practice" in humorous terms. He said that the only apparent good net result of his practice at Sherburn was the establishment of a cemetery—that it had never been needed before because the people were so healthy; that at these meetings he saw many faces which would not have been present, he was sure, had he continued practice.

As a type of his humorous writings, there is quoted here a set of verses which he wrote after the football team of the University of Minnesota had beaten the team from the University of Nebraska:

We are feeling rather lame,
Minnesota,
And dejected since the game,
Minnesota.
'Twas a most unequal war,
And our brave boys couldn't score
Against lunkers six-foot-four,
Minnesota.

When we strove to buck your line,
Minnesota,
When we gave the mystic sign,
Minnesota,
We could see you had us beat,
For your men just spread their feet
And it blocked the way complete,
Minnesota.

Trot out men of decent size,
Minnesota.
Not such great, ungainly guys,
Minnesota.
Average mortals can't compete
In the game and hope to beat
Freaks who run to neck and feet,
Minnesota.

The following poem is an example of the pathos which ran through many of his writings:

Only dreaming—nothing more—
Back again so many years,
Herding sheep—'twas when the war
Filled the land with blood and tears.

Just a little boy again,
Chasing sheep with brother John
(Both of us are grown-up men
And the years creep on and on).

But I dreamt with strange delight
Of the scenes of long ago—
There the woodland to our right,
There the cherry grove below.

There the schoolhouse by the lane,
Where I learned my A B C's;
There the clearing where the grain
Nodded to the summer breeze.

There the happy childhood home,
There the sheepshed long and wide,
There the creek that tossed its foam
'Gainst the rocks on either side.

In my dream I saw it all,
Lived my childhood hours in one,
Heard the voice of Father call,
"It is daylight—come, my son!"

O'er his grave the rain and snow
Many years have fallen deep,
And I only see him now—
Only hear him in my sleep.

And the old home doesn't seem
As it did in other years—
Only when I sleep and dream,
Dreams of joy to wake in tears.

When upon the bed of death
I, at last, am called to lie,
And my slowly ebbing breath
Comes with labored sob and sigh,

I can in my pain rejoice
That my last day's work is done
If I hear my father's voice,
"It is daylight—come, my son!"

Dr. Malcolm James Farrish^{2,13,19} was born in Rockwood, Ontario, of Scottish parents, in 1864. His elementary education was obtained at Rockwood Academy. Four years later he was graduated from Toronto University and in 1890 from Trinity Medical School. After completing a year of internship in the Minneapolis General Hospital he practiced one year in Minneapolis. After this he spent one year on the Range. In 1892 he took up residence in Sherburn.

Dr. Farrish having had what, for those days, was a most thorough medical education, was known as a brilliant physician and surgeon, and it was unusual for one of his ability to settle in a little village of a few hundred inhabitants. His practice soon extended into distant localities, however, and he had one of the most extensive practices in the southern part of the state. The first major surgical operations in the section were done by him, in homes and later in the hospital which he built.

He held many civic offices and was a lifelong Democrat without compromise. As such he attended state conventions and was a delegate to one national convention. Dr. Farrish was much gifted along literary lines also and wrote and spoke with ability and originality. His ready wit and fund of stories made him the center of any group in which he happened to be.

In 1902, Dr. Robert Farrish, a younger brother, after an internship at the Mayo Clinic joined him and together they carried on a large practice.

In 1915, at the early age of fifty-one years, Dr. Malcolm James Farrish died at his home in Sherburn. His wife and two children, Charlotte and Dr. Robert, Jr., survive.

Henry Nickey Rice^{2,3,4,11,12,13,23} was born in Whitley County, Indiana, near Fort Wayne, September 2, 1842, the second son of Daniel B. Rice and Rose Ann Nickey Rice. At the age of eighteen years, in 1862, he joined Company B, 74th Indiana Regiment of Volunteer Infantry. He was wounded in the battle of Lovejoy Station, he marched with Sherman to the sea, and he spent a short time in Libby Prison. He served until 1865, when he returned to his home in Indiana. After his return he taught school one year. In 1866 he was married to Sarah Ellen Reed and in the same year brought his wife to East Chain, Martin County, where he joined his father in farming a homestead and in running a store.

In the *Martin County Sentinel* of October 16, 1874, appeared an item that read as follows: "Messrs. Henry Rice and Albert J. Franklin start for Keokuk, Iowa, in a short time where they propose attending a course of medical and scientific lectures. These gentlemen for the past two years have been studying with that renowned and successful practitioner, Dr. Winch of Blue Earth. That they will prove worthy and efficient disciples of Esculapius we have not the least doubt."

The next notice, in April, 1875, stated that Dr. Rice had opened an office in Fairmont. In 1885, Dr. Rice was graduated from Rush Medical College, Chicago.

Dr. Rice was a tall, slender man with a long, black beard. He always wore a long black coat and usually a tall black silk hat. Sitting upright in an open buckboard as his horses dashed through the main street, he was an impressive figure. He felt that his was an honorable profession and he expected the deference due him. Old settlers still remember him as a doctor with a real professional bearing. He carried on a successful practice and accumulated considerable property. He took an active interest in the Masonic Lodge. That he had civic spirit is evidenced by the fact that he was mayor of Fairmont for eight years; he served one term in the Minnesota Legislature, in 1877.

In 1897, he left Fairmont, removing with Mrs. Rice to Santa Ana, California, where he practiced medicine until 1907; thereafter they made their home in Hollywood. They lived to celebrate, in 1932, their sixty-sixth wedding anniversary.

HISTORY OF MEDICINE IN MINNESOTA

sary. They had six children and twenty grandchildren. One daughter, Rose, wife of Mr. Edward J. Edwards who has been a druggist in Fairmont for more than sixty years, still lives in that city.

Dr. Rice died in Covina, California, in 1935.

Dr. Ferdinand N. Hunt^{2,3,4,13} was born in Sterling County, Illinois, in September, 1857, the son of Nehemiah A. Hunt, a pioneer physician of Blue Earth County. In 1863, the family came by oxtteams and covered wagons to Minnesota and settled on a claim at Lura Lake in the southern part of Blue Earth County. Ferdinand attended Mankato High School and completed two years at Carleton College. He then taught three years as principal of the Fairmont schools. Before he came to Fairmont several teachers had been thrown out by the boys and the contract he signed with the board provided that he must "stay in the school building" or he would get no salary. He stayed in. In 1880, he entered St. Louis Medical College. He was graduated in 1883 and settled in Fairmont, to take over the practice of his brother, David Winslow Hunt, who had broken down in health. Dr. F. N. Hunt practiced in Fairmont for ten years, during which time he went through the hardest of experiences on the prairies. He was a man very active and fortunately of remarkable health and strength. His trips extended fifty and sixty miles westward across the prairie.

Dr. Hunt was a great lover of horses and always had the best he could find. He brought in an imported Cleveland Bay, "Lord Newsom," but although this horse was of fine coach type his progeny did not have the stamina to hold up under hard use. A little Morgan horse, "Billy Harlow," produced wonderful horses that doctors all over the southern part of the state tried to get. They were invariably coal black, with a star in the forehead, very handsome and spirited, gentle, and tough. Dr. Hunt kept a good many of these horses. He had one team of Morgans that trotted to the pole in less than three minutes. He always said that his teams took a slow trot and never stopped, up or down hill, no matter what the distance, and that he never injured or winded a horse. Every horse in the stable, and there were always from five to eight, had to be curried night and morning. No mud was ever left on over night. After a drive in warm weather, the horse's head and the neck under the collar were always washed off. Horses in the winter were kept well blanketed day and night except when under the harness and were fed all the oats and hay they would eat. If there was a hobby that Dr. Hunt and most early physicians had, it was that of owning fine horses. With these faithful helpers, physicians spent many long hours, and to them they often trusted their lives. In storms and on dark nights it was the usual thing for the doctor to give the horses the rein, and they seldom failed to find their way across the prairies and to get home safely.

In 1893, Dr. Hunt sold his practice to W. J. Richardson and removed to Blue Earth where he spent twenty-one years. In 1914, with his son, Dr. Roscoe C. Hunt, he returned to Fairmont where he established the Fairmont Hospital. He confined his practice largely to surgery and was active until a year before his death. In February, 1934, he fell on the ice, receiving a head injury from which he died after two weeks.

In 1882, Dr. Hunt was married to Ida Lenore Cadwell, daughter of Alpha D. Cadwell, pioneer merchant of Fairmont. There were two sons, Roscoe C., of Fairmont, and Rollo F., a lawyer in Duluth. Dr. Hunt never was in politics, but he did at times serve on civic boards and for a good many years on the State Board of Health. He practiced more than fifty years in Martin and Faribault Counties. His widow survives (1942).

HISTORY OF MEDICINE IN MINNESOTA

Dr. George Rising Harnden^{1,3,20,24,25} was born near Barrington, Illinois, April 14, 1839, the oldest son of Joshua S. Harnden, an old-time whaler. He attended the country school in the community. In 1873, George and his two brothers, Wells and Charles, drove to Minnesota in covered wagons. The three brothers homesteaded claims east of Sherburn, Martin County, with which old timers are familiar.

While the family was still in Illinois, George Harnden's wife was in poor health much of the time, so that the family physician prepared a case of simple remedies for Mr. Harnden to use for her and gave him a medical book to study. This was the start of his medical study and after settling in Minnesota he gave medical care to neighbors and others needing it. There were medical practice laws, however, which were interfering with the continuance of this practice, and he decided to qualify himself for a medical license. His wife died suddenly in 1881 from blood poisoning caused by the bite of her driving horse. Mr. Harnden in that year returned to Illinois and studied at Wheaton College and at the Homeopathic Medical School of Chicago, receiving a diploma from the latter school in 1884.

After his graduation he returned to Sherburn, Minnesota, and commenced his medical practice, which continued until 1902 when he moved to Oklahoma. He was not satisfied there and returned to Sherburn after a year, to resume practice to a greater or less extent until 1913. In that year he went to Stillwater, Oklahoma, where he died May 25, 1920, from cerebral hemorrhage.

At the time of the Great Chicago Fire, in 1870, George Harnden was driving a milk wagon in the city. He was one of the first to re-enter the city in the morning after the fire and he recalled that the bricks were so hot that the horse walked gingerly. In his frontier practice Dr. Harnden went through the usual experiences in storms on the prairie. He was known as a very charitable man who did much for people, rich or poor. He organized and faithfully supported the Congregational Church in Sherburn, and for years was a prominent and useful citizen of the community.

His first marriage was in 1861 to Frances E. Meachem. To them were born a son, Florus David, and a daughter, Elizabeth Frances. As stated previously, his wife died in 1881.

After returning to practice subsequent to his graduation from medical school, Dr. Harnden was married, September 22, 1885, to Alice C. Reynolds. To them were born three children, Myra A., Merrill DeWitt, and Millard George.

Dr. George R. Harnden^{18,20} was the son of early residents of Martin County. His license to practice was issued by the State Medical Examining Board on December 3, 1883, and it was filed by the Martin County Clerk of Court on the next day, December 4, 1883. Dr. Harnden commenced practice at once in the village of Sherburn, which had several hundred inhabitants, and continued there until about 1900. He later entered practice in Oklahoma, where he died.

(To be continued in November issue)

President's Letter

MEDICAL EDUCATION IN WARTIME

What are the obligations and what should be the attitude of the members of the State Medical Association with respect to medical education in time of war? The following comments on this question are offered for your consideration.

I think it can safely be said that military service of bona fide premedical and medical students who are maintaining good grades will be deferred until after their internship. But the difficulties of supplying adequate instruction for our medical students are very real. Members of faculties who are less than forty-five years of age and have been declared essential are under the constant pressure of embarrassing situations. Their colleagues and members of their communities not infrequently wonder why they have not received commissions. They should have some recognition in the war work—some emblem which conspicuously indicates that they have been declared essential at home—or they should be commissioned and assigned to the faculty as necessary men. There is not a sufficient number of older men who are qualified to teach. A certain proportion of younger men is necessary to every faculty.

Research necessarily will be curtailed but we should do our best to encourage those who are incapacitated for military service and those who are more than forty-five years of age to continue their productive work. War is destructive of many elements of our culture, and we must maintain, if possible, a foundation for future reconstruction.


Graduate education will suffer. Fewer men will be able to accept fellowships and study as specialists. This is a situation which will affect the future but the demands of the military services make it impossible to declare many graduate students essential.

The meetings of most national medical societies will be canceled because of travel, the time required for attendance, and the extra load on every individual physician. In some instances reports of papers probably will be supplied in abstract to the members by mail, and the officers only will meet to conduct business. An entirely different situation exists, however, with respect to state, district and county societies. Even with gasoline rationing most physicians will have a supply liberal enough to attend meetings near home, and one-day meetings will require very little time. Consequently, it would seem wise to encourage monthly meetings of component and county societies. There should be no difficulty with programs for these meetings if the president of the local society will conduct a round-table type of discussion based on the packet of the month which is distributed by the State Medical Association. A digest of the packet can first be presented and the meeting opened for general discussion. These packets will be on timely subjects of interest to everyone. Set programs can be arranged for regional societies like the Southern Minnesota and Northern Minnesota Medical Associations, and for the State meeting.

Every encouragement should be given to those conducting courses at the Center for Continuation Study. By attendance whenever possible, a physician can combine a short vacation with profitable instruction. The work of the Center for Continuation Study is an outstanding achievement of national importance. We should in every way show our appreciation of the accomplishments of Dr. W. A. O'Brien and his colleagues.

In addition, I would like to see the staff of every hospital in the state arrange an occasional clinic day for physicians in nearby communities. Very interesting discussions probably would develop and the quality of the work of the staff itself would be improved.

In such simple yet effective ways can postgraduate education and a high standard of medical care be maintained during this tragic period of our history.



President, Minnesota State Medical Association

EDITORIAL

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BUSINESS MANAGER
J. R. BRUCE

Volume 25 OCTOBER, 1942 Number 10

TUBERCULOSIS AMONG MEXICANS

The Tuberculosis Abstract for October, issued by the National Tuberculosis Association, deals with the incidence of tuberculosis among the Mexicans in our country. The incidence of tuberculosis in white people in our country in 1940 was 36 per 100,000 population. Among the Negro race the incidence is about three and a half times as great. The incidence in the Mexican race in this country is said to lie somewhere between the two and it is brought out that it is higher among Mexicans who have come north than among those who have remained in the southern states.

Minnesota has a considerable Mexican popula-

tion. Minnesota physicians have known for years that the incidence of tuberculosis in Mexicans in this state is high, so much so that an infant Mexican admitted to a municipal hospital in the Twin Cities with symptoms of meningitis is most likely to be diagnosed as miliary tuberculosis. It would be interesting and valuable to make a survey of the incidence of tuberculosis among the Mexicans in this state and to do something about the active cases found.

CORONAR HEART CASES

DEATHS from heart diseases are increasing at an appalling rate. As an instance, view the statistics of the Hennepin County Coroner's office. This is true not merely in Hennepin County, but all over the country. Inasmuch as the coroner's office deals only with sudden, unexpected deaths where the victim has not been under a doctor's care, this means that many times the number seen by the coroner die from heart disease. With only eight months of 1942 gone there have already been about 230 deaths among those investigated by the coroner's office in Minneapolis, due to this cause. Last year there were 319 coroner heart cases, or 36 per cent of the cases investigated. In 1925 there were 165 cases, or 21 per cent.

The number of heart deaths seems to reflect the tenacity of the times. In 1929 while prosperity reigned there were 145 heart deaths or 20 per cent. After the crash the 1930 records show 190 deaths; and the depression of 1933 sent the figure up to 226. Since then it has increased steadily.

Coronary sclerosis is the dominant type of heart disease causing sudden death. To some extent it is an occupational ailment. Businessmen and others who go in for heavy thinking and worrying are the most frequent victims. Conversely, transients and others who do not work because they prefer to be idle, are seldom coroner heart casualties. Most victims do not die in the midst of activity, indicating that it is not the immediate situation which causes death, but the background of emotional strain.

EDITORIAL

The following deaths from heart disease in Hennepin County are recorded by the coroner's office of Hennepin County for the period of 1925 to 1942:

Year	Heart Deaths	Total Cases for Year	Per Cent to Total
1925	165	770	21
1926	163	723	23
1927	184	690	27
1928	177	731	24
1929	145	773	20
1930	190	786	24
1931	189	813	23
1932	198	777	25
1933	226	824	27
1934	236	803	29
1935	223	811	28
1936	266	922	29
1937	263	790	33
1938	263	797	33
1939	290	824	35
1940	303	856	35
1941	319	886	36
1942	230	545	42

(incl. Aug.)

(approx.)

G. W. Callerstrom, M.D.
Deputy Coroner, Hennepin County.

MEDICAL SOCIETY DUES

By next year approximately one-third of the active members of the Minnesota State Medical Association and its component county and district societies will be in military service. The question of whether to meet the reduction in income by curtailing the activities of the association, by making deep inroads into the reserve fund, or by making an assessment was thoroughly discussed by the delegates at the Duluth meeting last June. The decision was the unanimous approval of a \$5.00 assessment.

The component county and district societies are faced with the same reduction in income. Members in the service have rightly had their dues suspended for the duration, or refunded, or both.

In the case of most county societies the dues

are determined according to the cost of the society activities. Where the overhead is at an irreducible minimum, the society faces the alternative of going in the red and drawing on reserves (if any) or leveling an assessment.

County and state assessments of this sort amount to sharing the dues of members in service. That is the least we stay-at-homes can do for our confreres in service, even if our practices may not show some increase because of the thinned ranks at home.

It is well for state associations and county societies to keep the home fires burning and not to reduce essential activities nor to run behind financially with the intention of making up deficits when the boys come home.

QUININE AND QUINIDINE

Among the many adjustments we have to make as a result of the war is that mild one in connection with quinine and quinidine. The regulation scarcely deserves mention except in the interest of harmony between the pharmaceutical and medical professions.

The Health Supplies Branch of the War Production Board restricted the sale of quinine and quinidine some time ago for use in the treatment of malaria and heart disease respectively on account of its limited source of supply and the great demand for quinine by the armed forces, exempting prior to June 19, 1942, small stocks already in the hands of the druggists. Since June 19 all quinine and quinidine is so restricted.

Compounds of quinine already prepared by April 4, 1942, are permitted to be sold but we understand that such stocks are about depleted. The only exception to the prohibition of manufacturing compounds in the future is in the case of quinine and urea hydrochloride for hypodermic use or in quinine hydrochloride and urethane.

When a druggist buys quinine or quinidine he must certify that the quinine will be used only for malaria or the quinidine for heart disease. Obviously the only way he can carry out his part of the agreement when he receives a prescription for either of the drugs is the indication on the prescription by the physician of the purpose for which it is prescribed. Some physicians may argue that the statement of the indication on the prescription might be construed as a betrayal of professional confidence. In the interest of co-

EDITORIAL

operation with the druggists who are affected by this necessary restriction this point can be overlooked by physicians.

The practical result of this limitation of the use of quinine and its derivatives is the elimination of the old tonic, Elixir Iron Quinine and Strychnine and certain coryza tablets. The resultant suffering will not be great. The counter sale of quinine for its questionable abortive activity should also be eliminated. Some physicians may be inconvenienced from an increased demand for prescriptions which would have to be falsely certified for this use.

Physicians are urged to cooperate with the pharmacists in carrying out the regulation in regard to these two drugs in the common interest of the successful prosecution of the war.

COMMUNITY AND WAR CHESTS

This month, Minneapolis and Saint Paul, along with many other American cities, put on their yearly Community Chest campaigns. Although America has by no means a monopoly among nations on charity, the Community Chest is quite a testimony to the Christian civilization of our country. Individual charity to a less fortunate neighbor has been in existence since the time of Adam and has the virtue of the giver along with the gift. It would be too bad if Community Chest giving were to be substituted for this individual kind of charity. On the other hand Community Chest giving has the advantage in that joint action can often accomplish results unattainable by individual effort.

Just as organization of charity giving by means of a chest prevents neglect of certain agencies and undue favoritism to others, it affords an economy in the effort of collection and enables the contributor to aid many worth-while activities by one contribution. The existence of a Community Chest greatly facilitates the budgeting of contributions.

During the past year or two numerous additional agencies have been making requests for contributions to relieve war sufferers. How much one should give to British, Chinese, Greek, Polish, Dutch or Russian relief has been a question difficult for many to answer. So in many American cities, Minneapolis and Saint Paul included, a War Chest has been added to the Community Chest. Quotas for each relief fund have been determined for each state and the larger

cities. This ups the goal for the combined Community Fund and War Chest in Minneapolis from \$1,367,195 to \$2,303,564 and in Saint Paul from \$730,000 to \$1,100,000, a very substantial increase.

In spite of mounting taxes and lease-lend appropriations the heart of America goes out to those less fortunate in our own land and especially to those so much more unfortunate in foreign lands. Community Chest allocations to foreign relief agencies comprise only a portion of America's total contributions. The sum total of gifts from individuals doubtless surpasses chest contributions.

The evidence of human compassion portrayed by Community Chests is reassuring in a world where there is so much evidence of hate and barbarism.

WAR DEPARTMENT

Services of Supply

Office of the Surgeon General Washington

August 22, 1942

The Surgeon General of the Army published detailed information concerning policies governing the initial appointment of physicians as medical officers on April 23, 1942. Necessary changes are given wide publicity, at his request, in order that the individual applicants, and all concerned in the procurement of medical officers, may know the status of such appointments.

The current military program provides for a definite number of position vacancies in the different grades. The number of such positions must necessarily determine the promotion of officers already on duty, and, in addition, the appointment of new officers from civilian life. Such appointments are limited to qualified physicians required to fill the position vacancies for which no equally well-qualified medical officers are available. Such positions calling for an increase in grade should be filled by promotion of those already in the service, in so far as possible, and not by new appointments.

If this policy is followed, it would definitely penalize a large number of well-qualified Lieutenants and Captains already on duty by blocking their promotions which have been earned by hard work. In view of these facts, it has been deemed necessary to raise the standards of training and experience for appointment in grades above that of First Lieutenant.

With this in view, The General has announced the following policy which will govern action to be taken on all applications after September 15, 1942:

All appointments will be recommended in the grade of First Lieutenant with the following exceptions:

EDITORIAL

Captain.

1. Eligible applicants between the ages of 37 and 45 will be considered for appointment in the grade of Captain by reason of their age and general unclassified medical training and experience.

2. Below the age of 37 and ABOVE the age of 32, CONSIDERATION for appointment in the grade of Captain will be given to applicants who meet all of the following minimum requirements:

- a. Graduation from an approved medical school.
- b. Internship of not less than one year, preferably of the rotating type.
- c. Special training consisting of 3 years' residency in a recognized specialty.
- d. An additional period of not less than 2 years of study and/or practice limited to the specialty.

3. Eligible applicants who previously held commissions in the grade of Captain in the Medical Corps, Regular Army, National Guard of the United States, or Officers Reserve Corps *may be considered* for appointment in that grade provided they have not passed the age of 45 years.

Major.

1. Eligible applicants between the ages of 37 and 55 MAY BE CONSIDERED for appointment under the following conditions:

- a. Graduation from an approved school.
- b. Internship of not less than one year, preferably of the rotating type.
- c. Special training consisting of 3 years' residency in a recognized specialty.
- d. An additional period of not less than 7 years of study and/or practice limited to the specialty.
- e. The existence of appropriate position vacancies.
- f. Additional training of a special nature of value to the military service, in lieu of the above.

2. Applicants previously commissioned as Majors in the Medical Corps (Regular Army, National Guard of the United States, or Officers Reserve Corps) whose training and experience qualify them for appropriate assignments may be CONSIDERED for appointment in the grade of Major provided they have not passed the age of 55.

Lieutenant Colonel and Colonel.

In view of the small number of assignment vacancies for individuals of such grade, and the large number of Reserve Officers of these grades who are being called to duty, such appointments will be limited. Whenever possible, promotion of qualified officers on duty will be utilized to fill the position vacancies.

Much misunderstanding has arisen concerning recognition by Specialty Boards and membership in specialty groups. It will be noted that mention is not made of these in the preceding paragraphs. This is due to the variation in requirements of the different Boards and organizations. Membership and recognition are definite factors in determining the professional background of the individual, but are not the deciding factors, as so many physicians have been led to believe.

The action of the Grading Board, established by the

Surgeon General in his office, is final in tendering initial appointments. Proper consideration must be given such factors as age, position vacancies, the functions of command, and original assignments. All questionable initial grades are decided by this Board. Due to the lack of time, no reconsideration can be given.

There are in the age group 24-45 more than a sufficient number of eligible, qualified physicians to meet the Medical Department requirements. It is upon this age group that the Congress has imposed a definite obligation of military service through the medium of the Selective Service Act. The physicians in this group are ones needed now for active duty. The requirements are immediate and imperative. Applicants beyond 45 years may be considered for appointment only if they possess special qualifications for assignment to positions appropriate to the grade of *Major* or above.

CLINICAL-PATHOLOGICAL CONFERENCE

(Continued from Page 807)

INTERN: What is the logic of waiting until the tumor is the size of a lemon before attempting to remove it?

DR. HERTZOG: McFarland's idea was that the tumor became better encapsulated and was easier to remove with less chance of recurrence. However, I do not believe the majority of surgeons think this is true. Wood reported 55 per cent cured by the first operation and 30 per cent more by subsequent operations. I would like to ask Dr. Gratzek to say something about the effects of irradiation on these tumors.

DR. GRATZEK: In treating these cases pre-operatively, and in those patients who refuse operation, it is necessary to do it very vigorously. Parotid tumors have to be treated to the point of skin tolerance, as they will not respond to radon implants. I have seen regressions after deep x-ray therapy given to the point of skin tolerance.

DR. PEPPARD: Naturally, I have not had considerable experience with these tumors but have made the diagnosis on several occasions. There are several points that I would like to bring up aside from those pertinent to the tumor. It is rather striking in hearing the history of this case that nothing whatever was said about anything except the fracture and the tumor. I have seen it happen so often that an old patient with an obvious lesion like this tumor lies around for a long time and finally expires. After we learn of the autopsy findings, we feel sorry that we did not have a note regarding some particular physical finding. These elderly patients are storehouses of pathological information and clinically, by neglecting them, we pass up an opportunity to sharpen our wits and increase our clinical skill. The implication was given that this patient died of starvation because her weight dropped to 80 pounds. However, at autopsy one lung weighed 800 grams and showed considerable pneumonia, and a pulmonary embolus was found. I think the correct diagnosis of pulmonary embolism varies from 33 to 75 per cent. We should try to improve our batting average. However, we are not going to hit 100 per cent on the diagnosis because there is frequently no clue that a patient has had pulmonary embolism.

Anatomical Diagnosis: (1) Mixed tumor of parotid; (2) Inanition; (3) Bronchopneumonia; (4) Pulmonary embolism.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

BILL FOR GOVERNMENT HOSPITALIZATION INTRODUCED

The long-awaited bill to amend the Social Security Act to include hospitalization has just been introduced into Congress by Congressman Eliot of Massachusetts according to word received from Washington. The bill has been referred to the House Ways and Means Committee.

Inclusion of hospitalization among already established Social Security benefits may appear to many people as a logical step forward in the Social Security program for Americans.

To physicians and hospital executives, especially, but also to all who fear extension of government paternalism into private fields and individual rights, the new bill will call for a great deal of careful consideration before it is adopted.

Medicine Involved

Not only the future of the flourishing system of voluntary hospital insurance is threatened by this measure, but also the great system of private hospitals. Obviously, the private practice of medicine which is intimately bound up in the hospital system is also deeply involved in the matter.

Many pertinent questions should be asked and answered to the satisfaction of the average citizen and of medical and hospital men as well as the politicians and reformers, before the bill is allowed to pass.

Presumably it provides for hospitalization at a fixed per diem rate for a fixed period in exchange for the usual additional Social Security payment by employee, employer and government. Would it result in more and better service than the hospital insurance plan?

What About Philanthropy?

Would it result in elimination of private philanthropy, in the substitution of government support and the inevitable lowering of hospital standards?

South Not Aided

Would it improve the situation in the South which is the only district where hospitalization is a real problem—and where those who might benefit most are unemployed and therefore not eligible to Social Security benefits?

Should the question of government hospitalization be considered at this time and wouldn't it be better for the American people and American hospitals to continue with the present voluntary approach at least until the war is won and various experiments in administrative techniques in voluntary insurance can be judged? These questions must be considered.

Pressure Due

There will be pressure brought to bear in the name of civilian health in wartime to pass this measure. Every effort should be made for a full and free hearing before recommendations are made for its passage.

FOR CO-OPERATION NOW

Letters from physicians already in the service with the Armed Forces frequently convey not only a sense of intense satisfaction because they are doing an essential job, but also a clear realization of the importance to the future of medicine of complete coöperation now with the Procurement and Assignment Service in providing physicians for active duty with the military forces.

The following paragraphs are quoted from a letter written by Lieutenant L. V. Berghs of Owatonna who is training for foreign service in one of the camps in the Southwest.

"Great Conditioner"

"Life in the desert is a great conditioner to say the least. I'm sitting in my tent with but a pair of shorts on and with the temperature about 120 degrees. A nice hot, drying breeze keeps the per-

MEDICAL ECONOMICS

spiration at a minimum. We are being conditioned for desert warfare so that probably means North Africa for me as soon as our unit gets assembled, organized, equipped and trained. This probably will be in two or three months.

"We have a grand bunch of fellows and the powers in Washington did a good job in assembling our unit on paper. We have the correct proportion of surgeons, internists, orthopedists, eye, ear, nose and throat men and GU men. They are a likable group, young and middle-aged, quite gay and 'devil may care.' They have all come out of lucrative practices and fine homes and families. Now that they have burned all their bridges behind them, their attitude is, 'let come what may.' It's a darn good attitude for morale. We're all set to go as far as mental attitude is concerned.

Medical Officers Needed

"The Army is still in desperate need of medical officers. I sincerely believe it is one of the bottlenecks in our war effort. We are not sending troops abroad until they have a full complement of medical officers.

"Now, then, it's up to the medical profession to furnish the officers. The American Medical Association promised to see that the Army gets all the doctors it needs. You will recall that McNutt agreed to give the AMA a chance to do it but also promised, in the event that we fell down on the job, the Government would step in and take things into its own hands. That certainly would be a very deep wedge driven into our profession toward government control which, in plain words, means socialized medicine.

Political Stick

"One may say we are going to get socialized medicine anyway so what's the use of bothering about it. To this, the medical men in the Army say NO emphatically. If the profession behaves correctly now in furnishing men to the Armed Forces without government intervention, then we can dictate what we want after this war is over. There is no doubt but what the Army is going to wield a tremendous political stick after this thing is over and Army medical officers will undoubtedly wield a big stick too, not only in the AMA but also through the Army itself in national policies."

A recent poll of county societies has shown

that Minnesota physicians are responding, but more are needed to complete the state's quota of 918 by January 1, 1943.

NEW COMMITTEE TO STUDY MEDICAL CARE IN MINNESOTA

Certain sections within the Minnesota State Conference of Social Work have brought up the question at intervals for several years of the adequacy of medical care and public health in Minnesota.

A resolution was accordingly passed a year ago at one of the sectional meetings of the conference asking for an immediate study of the medical and public health situation in Minnesota, looking toward the possibility of new provisions for medical service.

The resolution was not adopted by the conference as a whole owing largely to an active effort by representatives of other organizations more directly concerned with medical services than the social welfare group.

These others, including chiefly physicians and hospital association members, had no objection to a study of the medical situation in Minnesota. They did, however, object to such a study carried on by laymen who are presumably unaware either of the problems or possibilities involved.

Representative Committee

Accordingly a substitute action was proposed and accepted by the Conference at its spring meeting providing for a representative committee to study the problem. This committee was to be composed of three representatives from the Minnesota State Medical Association and three each from the Minnesota State Dental Association, the Minnesota Hospital Association and the Conference of Social Work. Dr. George Earl of St. Paul, chairman of the Committee on Medical Economics, Dr. A. W. Adson of Rochester, chairman of the Committee on Sickness Insurance, and Dr. W. A. Coventry of Duluth, chairman of the Committee on Low Income and Indigent Problems were appointed as representatives of the medical association.

Problem Involved

Discussions at the first meeting of the general committee called in September developed nothing definite in the way of a program or immediate plan of action but did impress upon all partici-

pants the tremendous scope and infinite perplexities which their undertaking might involve.

To begin with, there was the fundamental question: Is there actually a problem in Minnesota and if so, where does it specifically lie? To answer that question fully could well involve studies costing thousands of dollars—and the committee has no funds.

Assuming that a question could be solved, moreover, what could such a committee do and where could it start? There is, of course, much pertinent information based upon isolated studies and reliable opinion in the possession of all of the organizations represented. There are even a few isolated studies of an exhaustive nature, such as the study made last year by the United States Public Health Service in Freeborn county. But none of this material has been gathered into comprehensive surveys of the sort that might appeal to professional statisticians.

Objective Uncertain

Other questions pressed upon the committee at this meeting: Would it limit its investigations to the provisions for indigent and marginal income groups? Would it concern itself with the middle-income group whose troubles so much interest the social theorists?

Would it delve into the possibilities of prepaid medical plans or would it push better health education of all classes to take full advantage of existing facilities which are admittedly extensive in Minnesota?

Would it aim at wartime health problems exclusively or would it concern itself with long-range plans for the peace to come?

All of these questions would have to be considered before any effective program could be undertaken.

Education Fundamental

To physicians who have made studies of all these things in their own committees, the basic need is generally regarded as education—education as to facilities and education in hygiene and preventive medicine. Such education obviously must go beyond the information now carried on by means of platform, radio and newspaper programs. It must extend to the secondary schools as well as the colleges in which a smattering of latin verbs and verse forms is still esteemed more highly than a working knowledge of body mechanics and needs.

Education is a fundamental problem which a group of this kind must take into account if its work is to bear fruit.

Will Be Clearing House

In any case, the value of a representative committee of trained professional people is not to be discounted even though its efforts do not result in sweeping overnight reforms in Minnesota. It will undoubtedly prove to be a clearing house for an exchange of ideas which will have a value of its own in the more intelligent and practical handling of the work of each of the organizations represented.

Certainly the physicians will welcome a chance to acquire first-hand the opinion and the information of other welfare bodies in an informal discussion group of this character.

Should Be Concerned with Peace

It is obvious, however, that the medical men, at least, are too busy and hard-pressed by wartime demands to consider any fundamental changes in provisions for medical service in these times, even if such changes are considered desirable by other members of the committee. The studies and conclusions of the committee are therefore far more likely to be of practical significance if they are concerned with health problems of peace.

FOR SERVICE ON THE HOME FRONT

The time is coming soon when the State Committee on Procurement and Assignment may be obliged to direct the distribution of physicians on the home front, so that no community in Minnesota will be without medical service.

Any physician who can be spared now to take over the practice of a man in service is urged to write immediately to the Committee at the State Office, 493 Lowry Medical Arts Building, Saint Paul.

SOURCE OF TUBERCULOSIS INFECTION

The source of the great bulk of infections with tuberculosis is a human carrier with a pulmonary cavity. While the home is probably the place of most childhood and some adult contracts, many primary infections and more reinfections must occur in the place of work. Nurses, physicians and attendants on the sick encounter a real occupational hazard from infection itself and this hazard should be accepted as incidental to the professional life while hospital management should assume the obligation of minimizing opportunities for mass infection.—Saranac Lake Symposium on Tuberculosis in Industry, Saranac Lake, June, 1941.

INDUSTRIAL HEALTH

Edited by the Committee on Industrial Health and Occupational Diseases

J. L. McLeod, Grand Rapids, Chairman

H. B. Allen, Austin
L. S. Arling, Minneapolis
G. L. Berdez, Duluth
F. J. Elias, Duluth

L. W. Foker, Minneapolis
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S. E. Sweitzer, Minneapolis
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OCCUPATIONAL HEALTH HAZARDS

Keeping the employe healthy is the primary purpose of industrial health supervision. There are many factors involved in attaining this end, not the least of which is the prevention of an accident or illness before it occurs. An effective industrial health program requires close coördination of medical and engineering methods. A physician, therefore, to fill his part in the program and to think properly in terms of prevention must have at least a basic understanding of the general methods of engineering control, and obviously he must have some knowledge of the processes and material used in his plant together with an understanding of health hazards attendant with their use.

The control of an industrial health hazard begins with an evaluation of the degree of danger involved. Many times the danger will be self-evident whereas at other times it may be necessary to evaluate a potential hazard by engineering studies. There is a tendency on the part of the management to forget about occupational disease when medical personnel is available, and thus engineering problems related to health inadvertently fall into the hands of the industrial physician. A physician with some knowledge and appreciation of the methods of control can bring to the attention of the engineering and safety personnel a health hazard which could be subjected to some means of control. The coördination of the medical and engineering services of a plant will do much toward furthering a program for the control of occupational diseases.

Many Methods

There are many ways of controlling hazardous exposures to toxic materials, the most common of which is ventilation. Each method of control, alone or in conjunction with other methods, however, has its definite application in the field of industrial health. There are five general methods for the control of these hazards.

1. The most successful control measure is the *substitution* of a harmless material for one which is toxic, thus eliminating the source of the hazard. The number of opportunities for such substitutions are naturally limited. Changes in the method of processing will likewise often eliminate the source of the hazard.

2. Several methods of control commonly used prevent the dispersion of toxic materials into the atmosphere. *Segregation* of an operation prevents the exposure of workers to a toxic material not produced by their own work. These operations may be carried out in an isolated part of a plant or by a small group of men at a time when most of the workers are gone. Usually these workers need some personal protective device. *Enclosure* of the offensive operation may itself prevent the escape of hazardous material into the atmosphere. The use of *wet methods* has found extensive application in reducing atmospheric dust concentrations associated with certain operations. *Local exhaust ventilation* is very commonly used to prevent the dispersion of toxic materials into the atmosphere when the source of those materials is produced at a fixed location. Such systems must be very carefully designed to give maximum effectiveness.

3. A third general method of control consists of the *dilution* of the contaminated air with fresh air until the concentration of the toxic material no longer constitutes a hazard to the health of the workers. Either positive ventilation, fresh air forced into the room, or negative ventilation, contaminated air exhausted from the room and fresh air drawn in through windows and doors, or a combination of both may be used. This method is frequently used in conjunction with other methods of control.

Personal Protections

4. *Personal protective devices* should be considered only as a second line of defense for continuous exposures. Whenever possible the hazard should be eliminated. The use of respirators, gas masks, oxygen breathing apparatus, and similar respiratory protective devices is especially applicable for emergency use as a protection against infrequent toxic exposures. The use of protective ointments, gloves and suitable clothing, although not strictly engineering control measures for exposures of the skin, are finding wide application.

5. One of the most important, but frequently overlooked, methods for the control of occupational disease is *good housekeeping*. Good housekeeping means

(Continued on Page 826)

In Memoriam

MANUEL BALADO

Word has been received of the death of Dr. Manuel Balado on May 23, 1942. He was formerly a Fellow of the Rockefeller Foundation on duty at the Mayo Foundation. At the time of his death he was chief of the clinics at the Institute of Clinical Surgery, University of Buenos Aires, and also was head of the Neurosurgical Service at Santa Lucia Hospital in Buenos Aires.

Dr. Balado was born in Buenos Aires, Argentina, in 1897. He received the degree of M.D. in 1920 from the National University of Buenos Aires; was an intern at the Clinic Hospital from 1919 to 1921; was assistant in surgery for six months to Professor Jose Arce; and was fist assistant in teaching in the Institute of Surgery, Medical School of Buenos Aires, from 1921 to 1924. He entered the Mayo Foundation February 2, 1925, and left May 21, 1926.

Dr. Balado received the degree of Docente libre in Surgery in 1933 from the University of Buenos Aires. He was a member of the International Congress of Surgery, the International Congress of Neurology and the Asociacion Medica Argentina.

ALBERT H. FAGERSTROM

Dr. Albert Harry Fagerstrom, was born in Minneapolis February 2, 1886. He attended the public schools of Minneapolis and subsequently the University of Minnesota. He was graduated from the Marquette University Medical School in 1912, and was an interne at Swedish Hospital. He subsequently practiced medicine in Minneapolis for twenty-six years. In 1922 he married Miss Grace Rudstrom. He was a member of the Hennepin County Medical Society, Minnesota and American Medical Associations. He was a member of Phi Rho Sigma and an active member of the Zion Lutheran Church. He retired from practice on account of illness in 1939 and moved his place of residence to Clearwater, Florida, where he lived until the time of his death, May 1, 1942. He is survived by his wife and one son, his father and one brother.

DOUGLAS T. ORMOND

Dr. Douglas T. Ormond of Waconia passed away August 13, 1942, at the Abbott Hospital, Minneapolis, at the age of thirty-nine. The cause of his death was septicemia.

Dr. Ormond was born January 5, 1903, in Hegbert township, Swift county. He received his high school instruction at Saint John's University at Collegeville, Minnesota, and his medical degree at the University of Saint Louis in Missouri in 1927. His internship was served at Saint Mary's Hospital in Minneapolis.

After an association of several months with Doctors

Halloran at Jackson, Minnesota, Dr. Ormond went to Waconia in January, 1929.

Dr. Ormond was a member of the Scott-Carver County Medical Society, and the Minnesota State and American Medical Associations. He was also a member of the Waconia Knights of Columbus, the Waconia Hunt Club and was on the staff of Saint Mary's Hospital, Minneapolis. Last year he purchased the Frank J. Effertz home and was remodeling it for a hospital.

A glowing tribute was paid to the place Dr. Ormond had made for himself in his community through his services to the sick and afflicted as a practitioner by the local paper, the *Waconia Patriot*.

Dr. Ormond is survived by his father, John Ormond of Appleton, his sister Mrs. A. F. Fluegel of Morris, and two brothers, James Ormond of Appleton and Roy Ormond of Traverse City, Michigan.

HARRY PARKS RITCHIE

An Appreciation

On September 3, 1942, Minnesota lost one of its most distinguished surgeons in the death of Dr. Harry Parks Ritchie. Born in Wellington, Kansas, March 1, 1873, he came to St. Paul with his parents in 1881 and lived there the rest of his life. There probably are many men who knew Dr. Ritchie better and longer, but there are few who are influenced so much by his kindness, conduct of practice, and personality as the author.

Dr. Ritchie—The Teacher

Most of us had our first contact with Dr. Ritchie as medical students. The first time one saw him in the lecture hall one was impressed by his appearance. He was the medical student's ideal of what a successful surgeon should look like. Here was a dignified, well-groomed man with a goatee and a suggestion of a Van Dyke beard. While he was slender of frame and small in stature, one was never impressed by these qualities. His voice was quiet and he had the habit of molding out the words with gestures of his hands as he talked. One thing everybody noticed about Dr. Ritchie was his hands. They were delicate, graceful, and always well cared for.

His lectures were carefully prepared and to the point, but were of such a specialized nature that I am sure most of us did not obtain so much a comprehensive knowledge of plastic surgery as we did awe and wonder that such marvelous things could be performed. Rarely did he make excursions into fields other than the subject at hand. Other instructors used to love to speak of their exploits in the Spanish-American War or the World War. When Dr. Ritchie was asked why he was so reticent of speaking about his experiences in the Spanish-American War he would say, "Oh, they can do it so much more interestingly than I can; I have to concentrate on giving a good lecture to hold the students' interest!"

Dr. Ritchie was connected with the University of Minnesota in a teaching capacity ever since he was in medical school. While in the medical school, he taught in the department of physiological chemistry where he

IN MEMORIAM

was closely associated with Dr. Richard Olding Beard, Professor of Physiology, in the newly formed medical school. He was not much older than the students taking the course. He said the thing that saved him as a teacher was the notes of Professor Russell H. Chittenden, under whom he had studied physiology and physiological chemistry at Yale University.

After graduation from the University of Minnesota Medical School in 1896, he had an internship at the City and County Hospital in St. Paul, which is now known as Ancker Hospital. Then came a year of practice with Drs. A. MacLaren and Theodore F. DeWitt. When the Spanish-American War broke out he volunteered his services and on his return from the Philippines became associated with the Department of Gynecology at the University under Dr. Alexander J. Stone. Also at that time, he and Dr. MacLaren used to give a Thursday morning surgical clinic at St. Luke's Hospital in St. Paul. While this clinic was chiefly an operative clinic, nevertheless Dr. Ritchie found time to try to classify the operative specimens grossly and microscopically. Dr. Ritchie often remarked how proud he was of most of the specimens preserved in glass jars; when Dr. MacLaren would turn the clinic over to him he would parade out the specimens, and try to put some "romance," as he called it, into the discussion.

When the newly formed University Hospital opened in 1912, he was appointed to the surgical staff under Dr. James E. Moore. He always spoke of what a happy and ideal association this first group was; this group had much to do with the excellent esprit de corps that has persisted in the surgical department at the University Hospital throughout the years. Dr. James Moore was Chief and Dr. J. Clark Stewart was Associate Chief of the Surgical Service; Dr. Ritchie, Dr. Arthur Law, and Dr. Earl Hare were on one of the services and Dr. MacLaren, Dr. Arthur Strachauer and Dr. Warren Dennis on the other. There were many cancer cases sent to the University Hospital and it was here that Dr. Ritchie first became interested in plastic surgery. After wide surgical removal of the tumor, serious cosmetic deformities often resulted, so Dr. Ritchie became interested in trying to repair the defects with flaps and skin grafts. Seeing his interest in this work, Dr. Moore relegated to him the repair of cleft palates and harelips, which had been anybody's problem up to this time. It was due to the work of Dr. Ritchie and his associates that plastic surgery has reached such a high level at the University Hospital.

Dr. Ritchie was a clinical professor of surgery from 1937 to 1941, and was made professor emeritus of surgery in 1941. At a testimonial dinner given on June 10, 1941, for Dr. A. R. Colvin, Dr. J. Frank Corbett, and Dr. Ritchie, Dr. Ritchie reviewed his years as a teacher at the University. Very modestly he said that he believed he got more out of the school than the school got out of him. Those of us who had him as a teacher, however, know differently.

Dr. Ritchie—The Surgeon

For years Dr. Ritchie had an operative clinic at the University Hospital on Thursday afternoons for the cases with cleft palates and harelips. Before the

operation he would see the baby and quite characteristically would give it a kiss on the forehead. In the dressing-room he usually discussed what he was going to do and during the operation he would explain the procedure step by step. As an operator, he was deliberate, yet gentle, and never seemed to be in a hurry. I think many of the younger men were surprised to see how well he could thread the eye of a very fine needle even in his later years. I can never remember seeing him disturbed or out of sorts in the operating room. He said that the results of his one "blow-up" in the operating room cured him forever. Years before, he had been working hard and really needed a vacation when one day he was doing a rather difficult case with an inexperienced student nurse as his assistant. Finally Dr. Ritchie spoke to her rather sharply, whereupon the nurse burst into tears. Dr. Ritchie was so distressed about it all that he sent the nurse a five-pound box of candy. He said it was a very expensive precedent, however, because thereafter the other nurses would burst into tears at the slightest provocation and he said he was always sending candy to the operating room. He decided that it would be cheaper to take a vacation.

Dr. Ritchie had a wide surgical practice and many of his patients were referred from surrounding states. His greeting to the patient was quite characteristic: "Well, how are you today? I'm so glad to see you. How have you been lately?" Regardless of how busy he was he always made it a point to make that patient feel as if he were the most important person he had seen that day. Children were particularly fond of him; in fact, one of them was asked in Sunday School why he should be good; the reply was: "So I can grow up and be like Dr. Ritchie!"

Dr. Ritchie had a kind word for everyone. When the conduct of one of the younger men was the subject of censure, he would say: "Oh, he'll straighten out after he grows up," and would change the subject of the conversation. If the person happened to be an older colleague, his only comment would be: "Oh, he knows better. He's just having a brain storm."

At medical meetings, Dr. Ritchie liked an atmosphere of dignity, but thought that the papers and discussions should have an air of informality. He rarely missed a meeting of the Minnesota State Medical Association, the American Surgical Society, the Western Surgical Society, or the Saint Paul Surgical Society. His idea of a surgical society was one in which the membership should be rather general with an especial attempt to include the younger men, while the policies were to be governed by the older members. He often said that a successful surgeon was to be judged not by how much money he made or how big his practice was, but by the esteem in which he was held by his colleagues. Considering these criteria, Dr. Ritchie was eminently a successful surgeon.

Dr. Ritchie—The Man

Dr. Ritchie's life was greatly influenced by his associates. He admired and respected his father, Dr. Parks Ritchie, who had been dean and also Professor of Obstetrics at the University of Minnesota Medical School. He characterized his father "as an ideal hus-

IN MEMORIAM

band and father who carried with him the teaching of his Presbyterian-minister father in his ideal of service to his patients. He carried in his little black bag, consolation, advice and a great fund of stories and quotations, which so many times emphasized a point or took the strain out of a controversy. Even his bill heads softened the blow, for around the margin were quotations such as: 'Hope is a good breakfast but a poor supper.'

Also, he had a great friendship for his classmates, Dr. W. A. Dennis, Dr. Walter Ramsey of St. Paul, and Dr. Frank Warren of Faribault. He used to say jokingly that he and Dr. Dennis were such close friends because their offices were at different ends of the building and their cases did not often cross. He had almost a brotherly affection for Dr. Arthur A. Law, who had been a boyhood friend and his immediate superior officer in the Spanish-American War. He had the highest admiration for Dr. MacLaren, with whom he was associated in practice for many years. He and Dr. E. Starr Judd used to try to get together once a year to relax and spend an afternoon at a baseball game. With the death of Drs. Dennis, Law, and Judd, Dr. Ritchie often remarked that he lost three of his best friends.

His home life was ideal. Mrs. Ritchie was a devoted and sympathetic wife for whom he had the greatest love and admiration. Occasionally, he would remark, "A doctor is lucky if he has a good-looking, clever wife, who is understanding of his problems, like Mrs. Ritchie." When he tended to work overtime at the office, Mrs. Ritchie would often call him. He would say, "Mrs. Ritchie knows she can always get me home in a hurry if she tells me we are having German potato salad for dinner!" He was an ideal father, and was almost worshipped by his grandchildren. When people asked him how many grandchildren he had, he would remark that he had thirteen yesterday, but Mrs. Ritchie hadn't called him yet this morning to say if the number had increased.

For the past few years his son, Dr. Wallace Ritchie, had been associated with him in practice; in his son he found a worthy successor to carry on the Ritchie tradition in medicine.

While Dr. Ritchie had not been in good health for a few years prior to his death, his indomitable spirit overcame much of his physical weakness. When death came quietly from hypertension with cardio-vascular complications, there was none that did not speak with admiration and respect of his sterling qualities of heart and mind. Few men leave behind them such pleasant memories as a teacher, surgeon, father and friend, as did Dr. Harry Parks Ritchie.

CHARLES E. REA, M.D.
Saint Paul

Liberty has never come from government. Liberty has always come from the subjects of it. The history of liberty is the history of resistance. The history of liberty is a history of limitations of governmental power, not the increase of it.—WOODROW WILSON.

OCCUPATIONAL HEALTH HAZARDS

(Continued from Page 823)

that everything in the plant should have a definite place and should be kept there. Disorderly plants encourage slovenly habits among the workers. Accumulations of dust and dirt on floors, walls, beams, and rafters tend to increase the general dustiness in the plant atmosphere. Dust can be removed by vacuum cleaning methods. Containers holding materials giving off vapors, fumes, or gases, should be stored or placed so that these substances do not contaminate the general atmosphere.

Efficient Maintenance Necessary

The proper installation of control measures is not sufficient in itself to give lasting protection against toxic materials. The efficient maintenance of these control measures is necessary because ventilation systems and protective equipment sometimes lose part of their original effectiveness. Frequent checks should be made to insure that workers are making proper use of protective devices. When changes in industrial processes or in materials are made, studies should be made to determine potential health hazards.

It is obvious that industrial physicians, as well as the engineering staffs of individual plants, cannot be expected to know all methods and means for the control of occupational health hazards. There are a multiplicity of ideas to be considered. One must, therefore, rely on outside agencies for help in these matters. Such an agency, as most physicians realize, has been recently established in the Minnesota Department of Health. The Division of Industrial Health of this Department provides a medical and engineering advisory service for the investigation and control of occupational health hazards. The engineering personnel of this Division is prepared to study the working environment for toxic concentrations of hazardous materials, and, when necessary, to offer recommendations for the control of these health hazards. As a final word, the industrial physician can facilitate this work by properly reporting occupational diseases, using the forms provided by the Division of Industrial Health.

G. J. RASCHKA, P. H. Engineer,
Division of Industrial Health,
Minnesota Department of Health.

I congratulate poor young men upon being born to that ancient and honorable degree which renders it necessary that they should devote themselves to hard work.—ANDREW CARNEGIE.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR OCTOBER

The Minnesota State Medical Association broadcasts weekly at 10:15 o'clock every Saturday morning over Station WCCO, Minneapolis and St. Paul, and at 11:30 o'clock over Station WLB, University of Minnesota.

Speaker: William A. O'Brien, M.D., Director of Postgraduate Medical Education, Medical School, University of Minnesota.

- October 3—General Principles of First Aid
- October 10—The Prostrate Patient
- October 17—Head Injuries
- October 24—Spinal Injuries
- October 31—Wounds of Face and Mouth.

1943 A.M.A. MEETING CANCELLED

The decision to omit the contemplated annual session of the American Medical Association scheduled for San Francisco in 1943 has been announced by the Board of Trustees. Among the many factors which led to the decision were doubtless the large percentage of the profession in service and unable to take part or attend the meeting and so many of these not in service too busy to attend.

The House of Delegates of the association will meet in Chicago instead of San Francisco at a date to be announced. Thus the scientific, but not the organizational activities of the association, will be the ones to suffer mostly.

The annual conference of secretaries of component state associations and editors of state journals will be held as usual in Chicago, November 20 and 21.

AMERICAN ACADEMY OF PHYSICAL MEDICINE

The American Academy of Physical Medicine will hold its Twentieth Annual Scientific Session at the Hotel Statler, Boston, October 14 to 17, 1942. The program will be composed of clinical and scientific presentations involving techniques of importance in Wartime Medicine.

Topics of the discussions and demonstrations include Physical Medicine in relation to Aviation Medicine, Physical Education, Habilitation, Rehabilitation, First Aid, and War Injuries, as well as consideration of the use of physical agents in injury and disease falling within the scope of various medical specialties. There will be symposia on Poliomyelitis and Electrosurgery. Encephalography, Electroshock, Fever Therapy, and Other Special Procedures will be discussed by outstanding authorities.

Speakers will include pioneers in the development of physical medicine in the earlier World War, physicians actively concerned with military medicine, and leaders

in the special medical fields. A clinic will be conducted at the Massachusetts General Hospital. The Academy will have the coöperation of the Massachusetts Institute of Technology and other Medical and Scientific Institutions.

Captain William Seaman Bainbridge, M.C., U.S.N., is the president. The chairman of the Committee on Program is Lt. Col. William D. McFee, M.C., U.S.A.R. Physicians are invited to attend without registration fee. A copy of the official program can be obtained from the secretary-treasurer, Herman A. Osgood, M.D., 144 Commonwealth Avenue, Boston, Mass.

CONFERENCE ON VENEREAL DISEASE CONTROL NEEDS IN WARTIME

Venereal disease and America's war effort will be discussed by high-ranking medical officers of the War and the Navy Departments, prominent physicians, health officers and others at a Conference in Hot Springs National Park, Arkansas, October 21-24, 1942. Headquarters will be at the Arlington Hotel.

The Conference will be held under the auspices of the United States Public Health Service in conjunction with the Eighth Annual Meeting of the American Neisserian Medical Society. Surgeon General Thomas Parran will preside. State and local health officers, venereal disease control officers, practicing physicians, and all others engaged in venereal disease control activities are urged to attend.

Subjects for discussion will include venereal disease control measures influencing the war effort, epidemiology of syphilis and gonorrhea—1942, wartime venereal disease control education, research influencing the wartime venereal disease control program, and techniques of venereal disease education.

AMERICAN COLLEGE OF SURGEONS

The annual Clinical Congress of the American College of Surgeons will be held November 17 to 20, 1942, at the Cleveland Public Auditorium, instead of at the Stevens Hotel in Chicago.

The program will be centered around the many medical and surgical problems incident to the war, including army and navy needs and civilian defense.

The meeting will be addressed by Surgeon Generals James C. Magee, Ross T. McIntire and Thomas Parran of the Army, Navy and Public Health Service, respectively, Lt. Col. George Baehr, Chief of the Civilian Defense, Dr. Frank H. Lahey, chairman of the Procurement and Assignment Service, Dr. Irvin Abell, chairman of the Board of Regents of the College, and Dr. W. Edward Gallie, president of the College.

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CLARENCE MARTIN JACKSON LECTURE

Dr. Thomas Francis, Jr., of Ann Arbor, chairman of the Department of Epidemiology at the School of Public Health, University of Michigan, will deliver the Clarence Martin Jackson Lectureship under the auspices of the Phi Beta Pi medical fraternity, on October 21 at 8:15 p.m. in the Museum of Natural History auditorium, University of Minnesota campus. His subject will be "An Interpretation of Current Studies in the Control of Epidemic Influenza."

In addition to his post at the University of Michigan, Dr. Francis is serving as director of the Influenza Commission for the United States Army.

UNIVERSITY ALUMNI CLINICS

The University of Minnesota Medical Alumni Clinics will be held on the University campus, October 22, 23 and 24, in connection with Homecoming Week activities. The Clinics will be largely concerned with "War Medicine and Surgery."

Highlights of the three-day session will be the reunion of the twenty-year class (that of 1922) and the annual alumni luncheon meeting. The latter is scheduled for Friday, October 23.

THE MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and

Country Club in Saint Paul, Tuesday evening, September 15, 1942. Dinner was served at 6:30 o'clock.

The program for the evening was as follows:

1. Case report—JOEL C. HULTKRANS, M.D.
2. The identification and measurement of the psychoneuroses in medical practice; the Minnesota multi-phasic personality inventory—J. C. MCKINLEY, M.D., and STARKE R. HATHAWAY, M.D. (by invitation).

WOMAN'S AUXILIARY

MRS. RAYMOND J. JOSEWSKI, *President*
Stillwater, Minnesota

MRS. W. H. RUCKER, *Publicity Chairman*
Minneapolis, Minnesota

Mrs. R. J. Josewski, president of the Woman's Auxiliary to the Minnesota State Medical Association, has set Friday, October 23, as the date for the autumn meeting of the Board. Arrangements for the luncheon meeting will be made by Mrs. W. B. Roberts of Minneapolis.

* * *

Washington County Auxiliary held its first meeting September 8, with Mrs. J. H. Haines presiding. Mrs. D. Kalinoff was named *Hygiea* chairman, and Mrs. J. W. Stuhr has assumed the duties of publicity chairman. A good year to you, Washington County!

MINNESOTA MEDICINE

OF GENERAL INTEREST

Dr. J. F. Lynn, former health officer of Waseca, has been reappointed to that office succeeding Dr. George H. Olds who resigned to enter the Army Air Corps.

* * *

Dr. D. E. McBroom has returned to the Colony for Epileptics at Cambridge, after a year's leave of absence.

* * *

Dr. N. O. Pearce of Minneapolis has been appointed social hygiene lecturer in the Minnesota Department of Health, Division of Preventable Diseases.

* * *

Dr. R. J. Cairns, formerly of Sanborn, has moved to Redwood Falls, where he is associated in practice with Dr. J. Gordon Cole in the Cole-Cairns Clinic.

* * *

A course in Diseases of the Heart (Etiology, Pathology, Diagnosis, Treatment) will be given for physicians at the Center for Continuation Study, University of Minnesota, October 12-17.

* * *

Dr. John B. Erich of Rochester presented a motion picture on "Traumatic Injuries of the Face" at a meeting of the Eleventh District of the Wisconsin Medical Society and the Interurban Academy of Medicine in Superior, Friday, August 14.

Dr. Irvine McQuarrie, head of the department of pediatrics at the University of Minnesota, will deliver the Porter Memorial Lectures at the University of Kansas in Lawrence, November 3 and 4.

* * *

Dr. M. M. Hursh of Hibbing has been appointed school physician of Hibbing, succeeding Dr. A. B. Rosenfield who recently was called to service in the Army Medical Corps.

* * *

Dr. L. J. Alger of Grand Forks, North Dakota, has announced the discontinuance of his practice in Otolaryngology and the limitation of his practice exclusively to Ophthalmology.

* * *

Fire which gutted the Butterfield State Bank building at Butterfield destroyed the equipment of Dr. L. M. Hammar and Dr. O. E. Hagen who had offices in the building. The structure, which was the finest two-story building in Butterfield, was gutted from basement to roof, with only the brick walls left standing.

* * *

The American Medical Association has canceled its 1943 meeting to avoid further stress on physicians' time and the nation's transportation facilities.

The Association's board of trustees, house of dele-

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gates, scientific councils, and Association officials will meet in Chicago in June, 1943, rather than in San Francisco as scheduled.

* * *

Presiding at the annual meeting of the Martin County Nursing Service held September 17 in Fairmont was Dr. G. H. Luedtke, president of the board. Guest speakers included Dr. W. A. O'Brien of the University of Minnesota and Miss Nora Rolf of the Minnesota Department of Health.

* * *

Among guest speakers at the tenth annual clinical assembly of the Omaha Mid-West Clinical Society to be held in Omaha, October 26-30, will be Dr. Arild E. Hansen of Minneapolis, University of Minnesota pediatrics department, and Dr. Harry M. Weber of Rochester.

* * *

Attention of the physicians of Minnesota is called to the request of the Division of Preventable Diseases of the State Department of Health that outdated containers and empty tuberculin or vaccine bottles which are not needed be returned to the office as it is difficult to obtain new equipment of this sort.

* * *

Staff meetings at the University of Minnesota Hospitals are being held "as usual" this year on Friday noons, the first meeting of the 1942-43 series being conducted October 2. This is the fourteenth consecutive year that the general staff sessions have been held. As in the past, talks presented will be compiled into a

mimeographed bulletin and distributed. The subscription fee for the year is \$2.

* * *

Dr. and Mrs. C. W. Lundquist of Winona are the parents of a son, David John, born September 11. Dr. Lundquist, who has been associated with the Winona Clinic, left, October 1, to enter active service with the armed forces. A captain in the army medical corps, he has been assigned to the O'Reilly General Hospital, Springfield, Missouri.

* * *

Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, gave the commencement address at the graduation exercises of the Columbia Hospital for Nurses, Milwaukee Downer College, in Milwaukee, September 10.

Dr. O'Brien also gave the banquet address at the 4-H club dinner, sponsored by the Minneapolis Civic and Commerce Association, September 2, in the Radisson Hotel.

* * *

Among courses for public health nurses scheduled to be held at the Center for Continuation Study on the University of Minnesota campus during the 1942-43 term is one on Mental Hygiene to be given at the Center, October 29, 30 and 31, in conjunction with the health section of the Minnesota Educational Association. Other courses included one on Rheumatic Fever to be given in February and another on Communicable Diseases and Poliomyelitis to be given in May. All are three-day sessions.

OF GENERAL INTEREST

The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Trudeau Society held their annual meetings in Chicago, September 16-18. On September 18, Drs. William R. Lovelace II and Horton C. Hinshaw, Rochester, discussed the "Effect of Reduced Barometric Pressure on Pneumothorax" before the Trudeau Society. On September 17, Dr. J. Arthur Myers, Minneapolis, spoke on "County Accreditation for Tuberculosis Control."

* * *

The American Medical Association has given \$1,000 to the Meeker County Tuberculosis Control Experiment, it is announced by Dr. J. A. Myers of Minneapolis, chairman of the Committee on Tuberculosis of the Minnesota State Medical Association.

The \$1,000 gift and an equal amount from the National Tuberculosis Association contributed previously, will be used to purchase x-ray film.

The experiment, which began in April last year, calls for tuberculin testing of every resident of the county, plus physical examination. Meeker county physicians are giving their services without charge.

* * *

The seventy-seventh annual meeting of the Michigan State Medical Society was held in Grand Rapids, September 23-25. The program was divided into general assemblies and sectional meetings. One feature included ten discussion conferences covering the specialties, in which several Minnesota people participated.

"Nephrosis and Nephritis" was the title of the paper read by Dr. E. Thompson Bell of Minneapolis, and "Pyogenic Infections of the Skin, Particularly Hidradenitis" was discussed by Dr. Louis A. Brynning, Rochester.

Sister Elizabeth Kenny, Minneapolis, participated in the round-table discussion of poliomyelitis; Dr. H. S. Diehl, dean on Medical Sciences at the University of Minnesota, spoke on "Procurement and Assignment."

* * *

When the Kansas City Southwest Clinical Society held its twentieth annual fall clinical conference in Kansas City, Missouri, October 5-8, four Minnesota men were guest speakers at the general assembly sessions. They were: Dr. Walter A. Fansler, of Minneapolis, who presented papers on the "Carcinoma of the Rectum" and "Surgical Treatment of Hemorrhoids"; Dr. Byrl R. Kirklin of Rochester, "Cancer of the Gastro-Intestinal Tract" and "The Present Status of Cholecystography"; Dr. Wesley W. Spink of Minneapolis, "Chemotherapy of Infectious Diseases" and "Toxic Reactions Encountered During Sulfonamide Therapy"; and Dr. S. Marx White of Minneapolis, "Management and Training for the Patient with Essential Hypertension" and "The Carotid Sinus Reflex."

* * *

Dr. Miland E. Knapp of the University of Minnesota Medical School staff, and Dr. Earl C. Elkins of Rochester, are newly elected vice presidents of the American Congress of Physical Therapy which met September 9-12 in Pittsburgh.

Dr. Elkins was among those conducting a symposium on fever therapy at the Congress, while Dr. Knapp was

OCTOBER, 1942



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one of three physicians who conducted a symposium on poliomyelitis.

The Congress presented its annual gold key award to Sister Elizabeth Kenny, Australian nurse, as the person "who has made the greatest contribution to the field of physical therapy" during the past year, and reported that her method of treating infantile paralysis at Minneapolis General and University Hospitals "has been increasingly studied and copied by the medical profession."

* * *

Beginning the fourth year of weekly radio health broadcasts for students in junior high schools, Dr. W. A. O'Brien, director of postgraduate education at the University of Minnesota Medical School, delivered the first talk of the series, September 30. The series, known as "Your Health and You," is broadcast over WLB and the Mutual Broadcasting Company each Wednesday of the school year, from 11 to 11:15 a.m.

The program for October and November follows:

October 7—"Importance of Health Habits."

October 14—"Effect of Good Posture"

October 21—"Disorders of the Feet"

October 28—"Effects of Exercise"

November 4—"Care of the Skin and Hair"

November 11—"Common Skin Diseases"

November 18—"Clothing and Health"

November 25—"Good vs. Bad Air"

Physicians are urged to recommend the program to schools.

* * *

Gifts totaling more than \$100,000 have been accepted by the University of Minnesota board of regents. Among the important medical contributions are:

\$10,700 from the National Foundation for Infantile Paralysis for continued study of the biochemical and physiological aspects of infantile paralysis.

\$10,000 from the National Foundation for Infantile Paralysis to be used for the support of Sister Kenny's work and for the continuation of the instructional program in the Kenny technique.

\$10,410 for Minneapolis General Hospital fellowships.

\$1,800 for Minneapolis General Hospital pediatrics directorship.

\$10,000 from the Home for Children and Aged Women to support the Children's Psychiatric Clinic.

\$7,000 from the National Research Council for research on fat metabolism under the direction of Dr. Arild E. Hansen, Department of Pediatrics.

\$5,160 from the U. S. Public Health Service for the support of a training program for nurse anesthetists.

\$4,000 from the W. K. Kellogg Foundation to establish a loan fund in the school of nursing.

\$3,000 from Sharp & Dohme, Inc., for researches on sulfonamides and in chemistry by Drs. Richard T. Arnold and William G. Clark.

\$1,200 from the Josiah Macy, Jr., Foundation, for support of a study on mechanism of the action of sex hormones, being made by Dr. Leo T. Samuels of the department of physiology.

\$1,200 and \$1,063 from the Rockefeller Foundation for British medical student fund.

\$1,000 from the Winthrop Chemical Company to establish research on pyocyanine and other related chemo-therapeutic agents, under Dr. Joseph T. King of the department of physiology.

Physicians in Service

Army and Navy medical service appointments include the following Minnesota men this month:

Dr. W. P. Anderson of Buffalo has received a commission as captain and is stationed in Louisville, Kentucky. Dr. Anderson has closed his office in Buffalo for the duration of the war but expects to return following the end of hostilities.

Dr. Frederick P. Army of Preston is serving as a first lieutenant in the Army Air Corps at Bowman Field, Louisville, Kentucky. Dr. Army, whose term as coroner at Preston does not expire until the end of this year, will be succeeded by Dr. J. P. Nehring, who has been appointed to fill out the term.

Dr. S. H. Boyer, Jr., has reported for duty at Fort Douglas, Salt Lake City. He has been commissioned a captain.

Dr. John L. Delmore, Jr., Roseau, commissioned a first lieutenant in the Army. He is now stationed at Fort Livingstone, Louisiana, where he is studying chemical warfare.

Dr. A. W. Doman, Lakefield, who reported for duty at Camp Barkley, Texas, September 23. He is a first lieutenant.

Dr. George W. Drexler was called to service at Fort Snelling the latter part of August.

Dr. Julius Yale Feinstein reported for duty September 5 at Chanute Field, Illinois.

Dr. John Feuling of Itasca Clinic in Bovey, who enlisted in the Navy.

Dr. J. E. Frank of Marshall reported in September to Bowman Field, Kentucky air base, where he is serving as captain in the medical corps, U. S. Army.

Dr. R. B. Graves of Red Wing, first lieutenant in the United States Army Air Corps, at Salt Lake City. Dr. Graves has been affiliated with the Medical Block Clinic since 1935.

Dr. Robert G. Hankerson, Minnesota Lake, left September 21 for Bowman Airfield at Louisville, Kentucky, after receiving his commission as first lieutenant in the U. S. Army.

Dr. Donald M. Houston, lieutenant in the U. S. Naval Reserve, reported September 28 for active duty at the Marine Base Hospital, San Diego, California.

Dr. J. C. Klein, Shakopee, commissioned a lieutenant and appointed as assistant surgeon in the medical corps of the Navy. Dr. Klein reports for duty, October 16, at Mare Island, San Francisco.

Dr. Leonard L. Lovshin of Rochester has received instructions to report for duty.

Dr. C. T. McEnaney, Owatonna, captain in the Army Air Force. Dr. McEnaney, a graduate of the St. Louis University Medical School, has been assigned to duty at Salt Lake City.

Dr. R. W. Merrill of Morris reported September 10

OCTOBER, 1942

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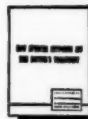
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to the Great Lakes Naval Training Station, Great Lakes, Illinois. He has the commission of lieutenant in the United States Naval Reserve.

Dr. John E. Minckler of Virginia, who has been associated with the Malmstrom-Sarff Clinic, first lieutenant in the Army Air Force medical detachment. He reported for duty at Salt Lake City. A graduate of the University of Minnesota, Dr. Minckler served his internship at Ancker Hospital.

Dr. George H. Olds of Waseca has received his commission as captain in the Army Air Corps.

Dr. L. J. Roberts, Columbia Heights, commissioned a lieutenant (jg) in the Navy Medical Corps. He reported for duty September 27 at Great Lakes Naval Training Station. During Dr. Roberts' absence, Dr. H. D. Good, with whom Dr. Roberts has been associated, will take care of his practice.

Dr. H. A. Shaw of Lake Park reported at Salt Lake City, Utah, September 22, for duty with the Army medical corps.

Dr. G. J. Shima, Sleepy Eye, is serving as surgeon at the Fort Scott Hospital in California.

Dr. Peter Virnig, Minneapolis, who has been named Junior Medical Officer at the U. S. Naval Training School for signalmen, University of Illinois at Urbana. Dr. Virnig, a graduate of the University of Minnesota, holds the rank of lieutenant (jg).

Dr. E. E. Zemke, Fairmont, assigned to medical corps of the 115th Cavalry regiment in which he has been a first lieutenant in the reserve since completing medical school. He has been practicing in Fairmont since 1930.

Hospital News

The new Glencoe Hospital, opened early this summer, is serving the community under the direction of Miss Clara Draxton, R.N., Superintendent.

* * *

Mrs. Mary K. Olson, formerly of Abilene, Texas, is the new night supervisor at the Staples Municipal Hospital.

* * *

Dr. F. E. Harrington, Minneapolis health commissioner, has been detailed by the Public Welfare Board to take over direction of General Hospital while Dr. D. W. Pollard, present superintendent, is in army service. No successor to Dr. Pollard will be appointed, the position to be kept open pending his return. Dr. Pollard is serving with the commission of Major in the medical corps.

* * *

At the American Hospital Association meeting to be held in St. Louis, Missouri, October 12-16, the usual Minnesota Hospital Association breakfast will be held Tuesday morning, October 13, at the New Hotel Jefferson. Members of the hospital associations in North Dakota, South Dakota, and Montana have been invited

MINNESOTA MEDICINE

BOOK REVIEWS

to join the Minnesota group this year. Dr. Walter P. Gardner, president, will preside at the breakfast.

* * *

Dr. J. Nelson Ewbank is the new assistant superintendent of the Willmar State Hospital. A successor to Dr. Magnus Peterson, who left the superintendency at Willmar to go to Rochester, has not as yet been named. Dr. George F. Freeman, superintendent of the St. Peter Hospital, is serving as acting superintendent until a successor to Dr. Peterson is named.

* * *

Dr. Magnus C. Peterson has been appointed by the State Director of Public Institutions to the superintendency of the Rochester State Hospital, and assumed his duties there September 1. Dr. Peterson, who has been superintendent of the Willmar State Hospital for the past seven years, succeeds Dr. B. F. Smith at Rochester. Dr. Smith recently accepted a position as superintendent of the St. Joseph State Hospital of Missouri.

* * *

The Redwood Hospital, which recently became a municipal institution, is being remodeled to care for a larger number of patients. Remodeling will add a four-bed ward, a two-bed ward and a single room. It is expected that eventually the hospital will have twenty-four beds. Another improvement will be the addition of an emergency receiving room in the basement, where examining may be done also.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

A BIBLIOGRAPHY OF AVIATION MEDICINE. Ebbe Curtis Hoff and John Farquhar Fulton. Prepared for the Committee on Aviation Medicine, Division of Medical Sciences, National Research Council acting for the Committee on Medical Research, Office of Scientific Research and Development, Washington, D. C. 237 pages. Price \$4.00. Springfield, Illinois: Charles C. Thomas, 1942.

This bibliography brought up to date by the authors with the aid of a score of assistants, lists 6,000 references to the subject in many languages. In this comparatively new field of medicine the number of articles which have already been published is surprising, half of them in the medical field and half in associated sciences. Previously published bibliographies in English and German are included and the references brought up to January 1, 1942, a few which have appeared up to May 31, 1942, included.

The contents are classified under fourteen different headings and the references appear under subheadings such as History, Physiology, Pharmacology, Psychology including the name of author, title of article, journal, et cetera. Additional indices of authors and subjects add value to the volume.

The present world conflict will add much to the bibliography of aviation medicine. This most complete

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bibliography to date represents a tremendous amount of detailed work and will prove invaluable to medical libraries in facilitating the ready reference to any and all phases of the subject.

ORBITAL TUMORS. Walter E. Dandy. 168 pages. Illus. Price \$5.00. Cloth. New York: Oscar Priest, 1941.

This unusual monograph reviews the results of twenty-four cases of orbital tumors treated surgically by the cranial route. Each case history in the series includes the history, physical and neurological examination, roentgenograms, a sketch of each operation (well labeled), gross and microscopic descriptions of the tissues removed and the subsequent course. The cases are also classified into four groups. Summaries of seven additional nonoperative cases are presented.

There is an excellent chapter devoted to a summary of the pathological study of the entire series of cases. A description of the operative procedure used by the author is presented in the most systematic and detailed manner.

The fruits of Dr. Dandy's experiences and results in this monograph are invaluable to the ophthalmologist and convincingly illustrates the necessity for close cooperation between the ophthalmologist and neurosurgeon.

ARCHIE OLSON, M.D.

THE PHARMACOPŒIA OF THE UNITED STATES OF AMERICA. Twelfth Revision. Official November 1, 1942. Easton, Pa.: Mack Printing Co., 1942. 880 pages.

Since the first Pharmacopœia was published in 1820 the U.S.P. has contained the very foundation of drug therapy in America. Published every ten years, the next will appear in five years, with a bound supplement in two and one-half years and interim revisions and supplements from time to time.

The rather conservative policy of the publication has resulted in the addition of a new remedy only after it has proven its worth and the removal of remedies only because of its innocuous desuetude.

The coöperation of the British Pharmacopœial Commission in the preparation of U.S.P. XII has been most gratifying. The Committee on Revision has also had the coöperation of Auxiliary Commissions of Cuba, Puerto Rico and the Philippines. In U.S.P. XII the pharmacopœial substances are listed with their corresponding Spanish titles for the first time while the U.S.P. continues to be published in a Spanish edition.

Another new feature of the U.S.P. XII is the addition of the commonly available sizes of tablets, capsules and injections. This was done at the request of physician members of the Committee on Revision.

The U.S.P. XII becomes official November 1, 1942. Besides containing information regarding the preparation of medicinal drugs, it contains a wealth of material about reagents, test solutions, volumetric apparatus and the like, and is as ever most complete.

MINNESOTA MEDICINE

BOOK REVIEWS



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PATHOLOGY OF THE ORAL CAVITY. Lester Richard Cahn, D.D.S. 240 pp. \$5.50. Baltimore: Williams & Wilkins Co., 1941.

"Pathology of the Oral Cavity," being written by a dentist, is especially valuable as a textbook for those in the dental profession. It covers all subjects which the dentist may encounter in his practice, relating to pathology. For diagnostic purposes it is invaluable. The chapter on oral soft tissue lesions associated with avitaminoses opens the door to a subject which hitherto has held a place of little or no importance in the mind of the average dentist. This subject may become one of extreme importance from the standpoint of diagnosis.

Attention is called to the effect of x-ray therapy on the enamel of the teeth, an effect which I believe has so far escaped the attention of a great majority of the dental profession.

The book contains much valuable information set forth in concise, easily understood language. In all, this is a commendable work, well worth a place in anyone's library.

C. W. BENSON, D.D.S.

THE RELATIVITY OF REALITY. René Laforgue, M.D. Translated by Anne Jouard. Nervous and Mental Disease Monographs (No. 66). 92 pages. Price \$2.50. New York: Nervous and Mental Disease Publishing Co., 1940.

The title of this interesting, thought-provoking monograph is taken from the caption of the third of five

chapters entitled "Concerning Anxiety," "On Conflicts in the Affective Development," "On the Relativity of Reality and the Genesis of the Need of Causality," "Reflections Concerning the Intellect," and "Reflections on the Notions of Free Will, of Liberty and of Death."

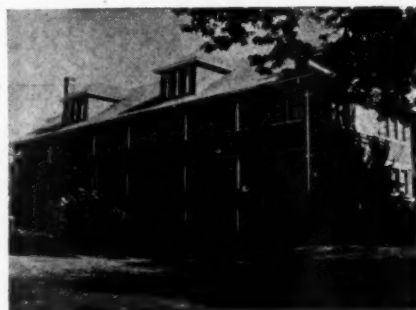
This presentation is of interest and value to psychiatrists whether or not they employ formal psychoanalytic technique.

The monograph opens with the following quoted paragraph:

"Anxiety and the manifold symptoms to which it may give rise form an important chapter in clinical psycho-analysis. We are here concerned with a group of patients including those suffering from phobias and hypochondriasis, in whose symptomatology anxiety is very much in the foreground. Among others, by way of contrast, such as those with obsessions, hysteria, paranoia, schizophrenia and frustration neuroses, anxiety is no longer in evidence, being concealed behind the defense barrier invented by the patient in order to escape from it. Both the manifestation of defense and the anxiety itself may be more or less apparent, according to the case. But, according to Freud, anxiety remains at the center of the problem of neuroses. And it is the study of neuroses that has made clear the role of anxiety in the development of civilizations. Thus in order to understand civilization and the place it occupies in the psychic economy of man, it is necessary first to study anxiety as seen in the neurosis."

A good discussion of anxiety is then presented.

Next the circumstances in which the individual must face anxiety in the course of its development and the causes likely to increase anxiety in a pathological way



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are presented. The way in which anxiety is handled in a healthy manner and the influence of anxiety on the development of intelligence and conscience of the individual and the group are later delineated.

Concerning the relativity of reality, the following quotations are illuminating:

"The conception of reality, as we see it, is therefore in a large measure a function of development of the libido of the ego, both individual and collective. It would seem that this development must of necessity go through oral, anal, and genital stages before arriving at the conception of reality as it appears to us. Even then, as regards the course of this development there are countless individual variants, according as certain individuals and groups, by reason of fixations, arrive at only partial marshalling of the libido of their ego which is held captive at oral or anal stages." Thus it is stated: "In the course of the ego's development there appear first, magic-thinking and the animistic conceptions, then religious thought and the poly- or monotheistic concept. This concept is slowly transformed into a scientific concept while the ego achieves the synthesis of all the libido impulses capable of utilization in conscious life." Again: "As a result we seem to distinguish three different levels of reality: magic reality, religious reality and scientific reality, including numerous transitional planes among those three, and it would seem that the way they are conceived is, in a large measure, a function of the development of the ego and of the need of causality."

The "intellect" is next discussed. By intellect is meant "the sum total of aptitudes which the ego of an individual utilizes in seeking to face reality with a scientific approach."

The discussion attempts to apply the considerations previously noted to present everyday life. Four groups of intellects are recognized: the intellect with oral predominance, that with anal predominance, that with anal predominance but with a genital component, and the intellect with genital predominance.

Intellectual types in a pure state are seldom actually met with. It is emphasized that the intellect of genital predominance is not "at all times better equipped than the anal type of intellect to defend our contemporary civilization."

The discussion of free will, liberty, and death is based on the ideas developed in preceding chapters. The concluding remark, which cannot be fairly judged without careful study of its context, is most interesting: "The march of ideas and the clash of opinions which constitute what we call today fascism and communism for example, appear to me to be one aspect of this profound psychic process, of this gestation of life seen in the developmental activity of the collective ego of society today."

The chief value of this monograph lies in its ability to provoke careful thought. One need not agree with its material to profit from its study.

WALTER P. GARDNER, M.D.

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